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ABSTRACT

Proceedings of a conference on Virginia's undergraduate curriculum are presented. Attention is focused on the future of the traditional arts and sciences disciplines. Contents include: (1) a keynote address on benefits of studying the humanities, along with answers to audience questions (William H. Bennett, head of the National Endowment for the Humanities); (2) comments on scholarship in the curriculum by five panel members as well as discussion questions and answers (John T. Casteen, III; Armstead Robinson; Michael Hucles; Robert Marshak; and Nancy Suttenfield); (3) comments and discussion on the changing curriculum by four Virginia college presidents (Thomas A. Graves, Frank L. Hereford, Alfred B. Rollins, and Joseph C. Smiddy); (4) an address and answers to questions concerning the rift in U.S. culture that divides the humanities from science and the need to reintroduce the humanities into both science and practical life (Evelyn Fox Keller); (5) an address by Virginia Governor Charles S. Robb; and (6) perspectives on future directions by two Virginia educators (George R. Healey and James A. Davis). A list of concurrent session topics and panelists is appended. (SW)

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The Liberal Arts and Sciences:
A Renewed Commitment

HE 018 354

The Place of the Liberal Arts and Sciences in the Curriculum: A Renewed Commitment

Proceedings of a Conference Sponsored By

The State Council of Higher Education for Virginia

December 17-18, 1984

Richmond, Virginia

David L. Potter (Editor)

April, 1985

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Preface

Gordon K. Davies, Director
State Council of Higher Education for Virginia

The Council of Higher Education is pleased to present this record of its conference on the undergraduate curriculum. The conference was sponsored by the Council in cooperation with Virginia's public and private institutions of higher education and held December 17-18, 1984.

The conference grew out of discussions within the Council about the future of the traditional arts and sciences disciplines. Over the last decade, the Council has seen a marked shift by students from traditional studies to career-oriented programs. Having suggested for years that higher education was the way to get a better job and more status in our society, we now find that most students are unwilling to take any courses other than those which promise a direct pay-off in the job market. Students are working hard, but their focus is almost entirely on achieving economic security for themselves. A sense of responsibility to our nation, and to others with whom we live, is at a low point among the nation's youth.

Those who administer and teach in our colleges share responsibility for higher education's plight. We often have not provided leadership in shaping the curriculum, but have instead reacted to changes in student interests. We have not challenged students to consider their reasons for seeking higher education. We have not required students to develop competence in another language, improve their ability to speak and write English, acquire knowledge of the historical and philosophical bases upon which modern society is built, or understand science and technology. Without a clear vision of what students should learn, we are in danger of losing both our legacy as human beings and our cohesiveness as a society.

It has become too easy to call one's institution a "college of the liberal arts and sciences," far easier than to call it a "college of engineering" or a "college of business administration." "Arts and sciences" has become, in many institutions, a name for what is left over after all the professional programs have been organized into separate schools and colleges. When institutions insist that arts and sciences programs are essential to their mission, they have a responsibility to define a coherent curriculum in these disciplines and to ensure that students enroll in its courses.

The conference pinpointed some of the problems the liberal arts and sciences have: pressure on students to pursue narrow specializations; acquiescence to shifting demands by college faculties and administration; and a loss of vision and leadership to sustain liberal education and articulate its worth. But more important, the conference was an opportunity to examine both the ways we teach and the ways we organize knowledge, to take advantage of exciting new ideas for building bridges across disciplines, and to reshape the colleges and universities of the nation.

Over 400 college faculty, administrators and interested citizens came together at the conference to hear the presentations published in these proceedings. They were joined by over 50 colleagues who participated as panelists in sessions which addressed specific issues within the undergraduate curriculum. These sessions were not simply occasions for reiterating familiar pledges of commitment to liberal education. Instead, faculty and administrators from the arts and sciences and professional programs shared information about concrete actions being taken and specific ideas for change. A list of the topics and panelists is appended to the proceedings.

The conference is only a beginning. The great newspaper columnist H. L. Mencken once observed that "for every complex problem, there is a simple answer. And it is inevitably wrong." There are no easy answers, but we have begun to ask the questions. The next few years promise to be exciting for those who teach and study on the campuses of Virginia. The Council of Higher Education has directed that its Funds for Excellence program for 1986-88 support proposals for change in the undergraduate curriculum. It is planning regional conferences to follow up the conference and to sustain the enthusiasm that was evident among participants in the December conference.

The faculty and administrators of our colleges and universities share final responsibility for the curriculum. They alone can bring about a rennaisance in liberal learning. We publish these proceedings as a reminder of what was begun at the conference. We hope they will be useful in the curriculum review and change that is needed in American higher education.

March, 1985

Introduction to Dr. William Bennett
Dr. Gordon K. Davies

Welcome to the conference on the undergraduate curriculum entitled **The Liberal Arts and Sciences in the Curriculum: A Renewed Commitment.** This conference is sponsored by the State Council of Higher Education for Virginia with the very enthusiastic and gracious cooperation of the colleges and universities of the Commonwealth, both public and private. I am delighted to welcome you here today to what is probably the first statewide conference in the nation on the content and shape of the undergraduate curriculum -- probably the first but surely not the last.

Concern for the undergraduate curriculum, for the shape of American higher education, is in the air. There is a mood to do something, to make change that is constructive, positive and prepares us for the rest of this century and the beginning of the next. With an array of colleges and universities such as ours in Virginia, an array that includes both the venerable and the adventuresome -- and the two are not necessarily the same, nor are they necessarily different -- Virginia is an appropriate state to take the lead in what will be a national debate on what we are doing, why, and how well we are doing it in higher education.

A word or two -- before I introduce our keynote speaker for today -- about what this conference is about, and what it's not about. It is not about the conflict between the two tribes identified by Francis Bacon in Novum Organum about four hundred years ago, not about the conflict between science and the humanities. It is not about C. P. Snow's "two cultures." This conference is about liberal education, liberal education as distinguished from increasingly narrow specializations which purport to prepare students for something called the real world or, more concretely, a job and material security.

The problem is the pressure to change which is put on the curriculum, and has come to be put on the curriculum by our actions and the actions of others over the last two decades. That is the problem. The problem is also an occasion for great opportunity, exciting opportunity. As the dichotomies upon which our western traditions are built -- the dichotomies between subject and object, self and other, mind and matter, energy and light, space and time -- have been called into question, we find that physicists and poets, mathematicians and philosophers, anthropologists and historians have seen bridges between their work, and exciting, if occasionally frightening, opportunities to organize knowledge and inquiry in new and different ways. So this conference is about a problem, but also about a wide range of opportunities to reshape the undergraduate curriculum, and with it, to reshape the colleges and universities of this nation.

Americans are concerned today about the quality of their schools and colleges. Now that we are not feeling the pressure to accommodate ever-increasing enrollments, we can pause to assess and improve upon what we are doing. Not only can we do this, but we must. Your presence here today is testimony to Virginia higher education's commitment to undergraduate education. The presence of our first keynote speaker is testimony to a broader national commitment. Two weeks ago William Bennett issued a report on the state of the humanities in education. The report is entitled "To Reclaim a Legacy," and it is strong stuff. In it Mr. Bennett writes that the humanities are not just an educational luxury, and they are not just for majors. They are a body of knowledge and means of inquiry that convey serious truths, defensible judgments, and significant ideas. Unless the humanities are taught and studied this way, there is little reason to offer them.

Dr. Bennett was appointed Chairman of the National Endowment for the Humanities in December, 1981, by President Reagan. Prior to that he was President and Director of the National Humanities Center in Research Triangle Park, North Carolina. A native of New York, he was educated in New York City schools and has a bachelor's degree from Williams College, a Ph.D. in Philosophy from the University of Texas, and a J.D. from Harvard. He has taught law and philosophy at a number of colleges and universities and has consulted on curriculum development in a multitude of secondary schools. He has published articles in professional journals ranging from the Civil Rights Review at Harvard to Newsweek, the Wall Street Journal, and Commentary. In addition to his work at the Endowment, Dr. Bennett is Chairman of the National Commission of the Humanities, a trustee of the Smithsonian Institution's Wilson Center Fellowship Board, and a member of the President's Commission on Arts and Humanities.

Mr. Bennett does not bemoan the decline of the humanities. This is not the owl of Minerva taking wing at dusk. He tells us what to do, and he places the responsibility where it belongs. "Not by our words, but by our actions," he writes, "by our indifference and by our intellectual diffidence, we have brought about this condition. It is we, the educators, who too often have given up the great task of transmitting a culture to its rightful heirs." We are fortunate to have him with us today to start what promises to be an exciting and very important review in Virginia.

Mr. Bennett will speak briefly, and then take questions from you. Start thinking now of the kinds of questions you want to ask this gentleman. He will not be in Richmond too many times, and this is indeed a rare opportunity for us. I give you Mr. Bennett.

Keynote Address

Dr. William J. Bennett, Chairman
National Endowment for the Humanities

Address by Dr. William H. Bennett

Chairman, National Endowment for the Humanities

Thank you, Gordon, very much. Gordon said that Virginia will here be first in the country to pick up these questions in this form, but surely others will follow. To anyone like myself who is a student of the origins of the American republic, it comes as no surprise that Virginia will be first in an exercise that has to do with the well-being and enlightenment of citizens. That is how Virginia and this republic got started. I see nothing inappropriate, indeed a great deal appropriate, by continuing that tradition as we approach the bicentennial of the Constitution.

I note that Virginia was the first state in the union that adopted the idea of alternative certification for teachers. In effect, it said that people who studied the liberal arts should not thereby be disqualified from teaching in the schools in the state. It seemed to be obvious enough, but it took one group of courageous people in the state of Virginia to put that through. I notice, too, that Virginia may be the first in the country -- through its new idea, the Virginia Center for the Liberal Arts -- to gain the essential involvement of college and university faculty in determining, at least recommending, the secondary school curriculum. I think that would be a great achievement as well. So I am happy to be back in Virginia, in Richmond, to talk to you about this topic of humanities.

With Gordon Davies, I will not talk about the "two cultures." I do think sometimes -- not as often as we used to, but still it occurs -- people in the humanities make their case, the basis for the humanities, by making a case against the study of other things. A. E. Housman, in his 1890 inaugural lecture at the University of London, said we should never, in making a case for the classics, behave like the Ottoman sultans of old -- who could not sleep soundly at night unless they felt their brothers had been killed. We do not have to make our case on the carcasses of others. Now, there are some others who deserve it, and when they do, I will be right there with others giving them a shot. Let me say, too -- to refer you to another text apart from our own (the report To Reclaim a Legacy) -- that I thought Gordon Davies' statement, "Keep the Liberal Arts in the College Curriculum," in the Richmond Times-Dispatch last July, was as good a statement on this topic, certainly, as we have seen.

If I may, let me very briefly introduce two of my colleagues to you. With me from Washington is Dan Schecter. Dan was the staff director of the study group, and if you would like more information on the study group or copies of the report, please contact Dan. Bruce Carnes is the Director of the Office of Budget, Policy and Planning, but he is secretly a Ph.D. in Humanities and taught English for five years at James Madison University. Bruce now runs the budget for the National Endowment for the Humanities, so there are all sorts of employment possibilities for humanists. We try to bring these living testimonials along to make the point from time to time.

We have issued a statement, To Reclaim a Legacy. It is very much along the lines of Gordon Davies' and other statements. We do not really think that what we say in this statement is particularly new and novel; but as George Orwell said -- and this is 1984, so we can pay tribute to Orwell, I think, from time to time -- sometimes the first responsibility of intelligent men is to restate the obvious. Aspiring always to be intelligent, perhaps we have restated the obvious. The thing that struck us following the issuance of the report was how much attention it got. That is just how much neglect the obvious has suffered in recent times. The positive response -- from the business community, from journalists (110 editorials to date), from generally well-educated American people -- about the importance of the humanities is very striking and very reassuring. ~~But~~ we have not heard very much from the higher education community in America. This is not unreassuring; it is just, I am sure, other business that keeps them from writing and congratulating us on our strong statement for the humanities -- and an admission of their own responsibilities and irresponsibilities in respect to their health.

In speaking to you this afternoon I noticed my title was The Humanities and the Sciences, but I have to restrict myself to the humanities. In talking about the humanities I think it will become clear why I need to restrict myself to the humanities. I would like to tell you something of my own undergraduate experience as a student from 1961 to 1965 -- an experience which forms both my thinking and the recent group report, and also explains in part why I cannot tell you very much about science.

When I came to college in 1961, I was interested in going to a decent college, taking some interesting courses, but basically getting in and getting out quickly, painlessly, going into the job market and making as much money as I possibly could. I did not think I was a unique case at the time I went to school. A notion that careerism was invented in 1979 or 1980 seems to me to be preposterous on its face. Most of the students who were my classmates, I think, had the same interests or ambitions I did. The difficulty I encountered with my plans for college was that I ran into a faculty committed to forcing me to take up and consider things other than the immediate interests and goals I had set for myself.

I signed up for an art history course, History of Art, which was taught at 8:00 in the morning because I was told that most of the time the lights were out. It was early in the morning, there were reclining chairs in the back of the room, and you could rest. But they switched instructors on us at the college, and we happened to get somebody who was committed to the teaching of art history to undergraduates. "I note that most of the undergraduates here," he said the first day, "major in political science and then go on to careers in business. Many of them go to law school. Well, I would like to expand upon your knowledge of politics, and to enlarge it for you. If you gentlemen can get your minds off Bennington and Smith and your future careers in Wall Street long enough, I'm going to show you the nature of tyranny."

The lights were cut but, given that introduction, we did not go to sleep. A picture appeared on the screen. It was Breugel's Master of the Innocents. He said, "I don't know what they will tell you in political science classes about tyranny, totalitarianism, terror, but this is its nature right here." He took us through that picture over a period of three days, a picture which we would have looked at in five seconds. He showed us what he meant by his claim about terror.

The second experience occurred in a Shakespeare course in my junior year -- a little requirement that you had to take, a course in drama. I took Shakespeare. I remember the professor, as we approached the study of King Lear, saying, "Gentlemen, we now will read King Lear. I urge you to get lots of rest, get some exercise, don't over-eat as we enter this experience. You are going through five acts of pure hell. You will never be the same after this experience." Remember, who was it who said, "Nothing is the same after you have read The Brothers Karamazov?" There was something of the same flavor in this introduction.

I remember, too, as a freshman, taking a required philosophy course and reading Plato's Republic. I took up for the cynic Teiresias. It was the fashion of the times in 1961, if you were young and bright and male, to be cynical about things such as justice, so I took up for Teiresias. He argued that might really did make right, that Socrates was an old pious fool whose arguments really did not hold up, who was just preaching. I remember getting turned around by one of those great modern-day incarnations of Socrates who was in that classroom, who took my arguments seriously but showed me they were foolish. I then went back to the text and the commentaries on Plato, not having any scholarly interest at the time, but really out of, I suppose, vanity, my male ego, to do better the next time in my confrontation with this professor.

Little did I know that this mixture of awe and admiration and anger and just great curiosity -- I remember the Lear example -- were all somehow conspiring in me to change my purported plans for college education into something more significant and substantial. The faculty, in effect, constituted a conspiracy aimed at our higher interests, our better selves. They were going to make us confront these questions and these interests despite ourselves. They understood that we wanted to get jobs, and they took what we were saying seriously, but they did not take our expression of our interests as the diagnosis. They took it as a symptom for what it was they needed to do as a faculty in teaching us.

They practiced courtship with us; they took us as lovers and we were gone. We were theirs, and thus, for me and for many of my classmates, our undergraduate experience was transformed from the original intentions we had about it.

However, when it came to sciences, we had a distribution requirement. You could take any two courses in science from a list of ten. So, as I said, not being the least sophisticated people in the world, we talked to the upperclassmen about which were the most painless; and I ended up taking a course commonly known as Stars, where they really did put out the lights and not very great demands were made on you. Then I took another one called Physics for Poets. There was Rocks for Jocks and Physics for Poets. I took Physics for Poets. It was known to be an easy course. It was a conspiracy agreement, a silent agreement between the students and the professor. The professor said: If you don't harass me very much, I won't harass you very much. If you don't come for office hours and bother me, so I can get my research and the book I am writing done, I will grade you pretty high, and won't make you learn anything otherwise. So I took both those courses. As a result, I cannot talk to you about science today because I do not know anything about science, thanks to the benign neglect of an otherwise very good institution. I always write out my check for my college and cut it in half -- giving what it gave me, and what it did not give me.

What of our report? I should tell you something of our report. We talked a great deal about the state of learning and the humanities, and we cited some numbers. The report is sprinkled with numbers. We do not think that is the heart of the report, although we notice that for many writers about the report, the numbers seem to be the easiest to handle or talk about. Nevertheless, some of the numbers are quite imposing: 75 percent of the American colleges and universities have no course in European history required for graduation; 72 percent of American colleges and universities, four-year institutions, have no course in American history or literature required; 86 percent of these colleges and universities have no course on Greece or Rome -- or the thought of Greece and Rome, or figures of Greece and Rome, or history of Greece and Rome -- required for graduation.

Well, despite requirements, perhaps many students take those courses anyway. The best numbers and evidence we have suggest that is not the case. Instead, since 1971, we have seen a steady and unwavering decline in courses in the humanities. The number of majors is at least halved in all the major disciplines in the humanities. As best we can tell, that number seems matched in the more important area of interest -- which is the number of courses per student, whatever the major. The report is not emphatic, does not push at all on the point and does not argue that we should have more majors in the humanities. That is not the point of this report; but it is to say that someone who graduates from a college or university, an institution that calls itself an institution of higher education, should have some decent experience with the humanities -- the study of history and literature, philosophy and foreign languages.

To summarize the report very briefly, I would say the first and most important thing it says to colleges and universities is to come clean and say what it is you are really for. If the introduction to the catalog or the overview of the university is really just fiction written by people dead 100 or 150 years, then we should say so. If we really do not mean what we say in this preface or introduction -- about the whole person, about the grasp of history, about literature, about teaching the truths of the human heart, about the great philosophical debates -- then let us take it out. So it is really to ask or present an existential question to the university.

In some sense, I think, the best colleges and universities at some point confront a student with the questions that may fairly be said to constitute an identity crisis. I know that is what my college did for me. Questions such as, Who am I?, What am I here for?, Where am I going?, What is it all worth, or -- in the words of the song a few years ago -- "What's it all about, Alfie?," I think good colleges insist that students ask. The point of our report, if I had to summarize it, is that we think colleges should ask those questions. What are they all about? What are they for? What do they hope? What do they want to be? Why are they there?

We suggest other things in the report. Obviously, or not surprisingly I think, we recommend that colleges and universities restore the humanities to an essential place in the curriculum. I think that the culture and civilization of which all students are members deserve some study, some time from their college plans. We recommend that teaching be honored and respected and rewarded in hiring and promotion and tenure decisions, and we point out that it is not enough for teaching to be honored, for people at a college or university or a state, merely by giving outstanding teacher awards. As one of our study group members, Bert Earlsmith, put it: If you want to have druids, you do not get druids by giving a druid of the year award. If you want druids, you have got to grow forests. You have got to create an environment that is conducive to druids, which will attract them and in which they will flourish and be happy.

To administrators, principally, we say you must exercise intellectual leadership, that the most important reason you are there is to exercise intellectual leadership. We stress the recent results of the Kerr-Reisman survey, which talked about the very small numbers of university presidents and provosts who feel they can say that they spend a fair amount of time providing academic and intellectual direction for the institution.

To the faculty, we say consider the needs of all students, overcome departmentalism. It is more important to consider the common intellectual needs of students than to push for more majors. We urge that, if departments are willing to do this deans must take that into account -- and so must presidents and state authorities.

We say, as well, that there is obviously an intimate connection to what we are talking about in higher education and the discussions of the last year about education at the secondary, middle and elementary school levels. This is one continuum for at least half our students. The members of the study group who wrote on this, particularly, and the whole study group -- which endorsed their findings -- found that, in many places, college entrance requirements, for example, constitute de facto a high school exit requirement. Why did foreign languages start to take such a terrible beating in the schools? The most important reason, I would submit, is because colleges stopped expecting the students to have them as a condition of matriculation. This is one continuous enterprise. We cannot look at the problems of secondary education without looking at the problems of higher education. Another example is the training of people who will be our teachers. If we do not do this well, effectively, at the college level, we will certainly have the consequences, and rue the consequences, at the other levels of education.

We said institutions must decide what it is they are about; and therefore, the report pushes hard for the humanities -- since that is our place, our job O'Connor says: "You have to push as hard as the age that pushes against you," and we find there is much pushing against us.

Now, let me stop and ask myself one question before I invite your questions or comments. This is the question I have been asked most often since we issued this report. Again, remember the attention that we have received has been just remarkable. People think it is an interesting report or a wrongheaded report, but anyway a report that is worth commenting on. The questions that we have been asked over and over again, at least if you are talking to someone other than a university person, are the following: What about careers? What about jobs? What about student interest in careers? Arguing from serious study in the humanities, how does this fit with both student interest and careers, and the plans of many colleges and universities to gear their programs toward careers?

Let me say a few things about the background of this question, because I think it is very important. First of all, in talking about a central place for the humanities, we are not talking about the lion's share for humanities. We do not specify any particular number of courses. It could be four courses, or six courses, or eight courses over four years. It could be two or three good courses over two years. One of the institutions that we applaud is Iowa's Kirkwood Community College, a two-year college where there are serious requirements and expectations in the humanities for all students. Whether it is four, six, eight or ten courses -- as it is at Brooklyn College, another institution we look at -- we do not suggest that the majority of courses have to be, or ought to be, courses in the humanities. The main thing is that they are central, well-taught, take up significant topics, and have expectations and demands of students.

Second, we are not at all opposed to careers. I believe, with John Dewey, that it is not enough for a man to be good. He needs to be good for something. There is no reason to think that the demands and expectations of jobs and job performance and the demands of education should be mutually exclusive concerns. I see no evidence that is the case.

Third, I would say, consider the possibilities -- and I think that this is something many of us may have to consider as we approach the future -- consider the possibilities of an institution called IBM University or AT&T University. This institution says to the high school senior who is graduating: You are interested in computers. You are interested in technology, in sales. Enroll at our institution. The program takes three years, and will teach you everything you need to know to get a job. If you finish in the top half of the class, we guarantee you a job; and the tuition policy is that we will pay you $1,000 a year to go. It is worth our investment to get some of the best and brightest out of high school into our company early, rather than to have you go to other institutions."

I am not suggesting IBM is planning this, or has this in mind. I have to tell you that, in our conversations with leaders of business and industry, they tell us the business they are in is training, not education. No, they say, we are not in the business that colleges and universities are in. They are in the business of education. We are in the business of training. Happily many of them do not know a lot of what is going on in colleges and universities, or else they would see that, in many cases, their reasons for respect are unwarranted. Why then, if they have so much respect for education, do so many of us want to run willy-nilly into their camp and say, "Oh, we don't have to do education anymore, we do training"? We realize we are stating these things very strongly, but I do think it does represent possibly a specter in the future which we may want to consider.

Fourth, I would say we have found at the N.E.H.-- and we have been looking at this problem for 16 years -- that many people go from the notion that it is important to get a job -- and it is important to take courses in order to be able to get a job -- to the conclusion, which is unwarranted, that the study of things which are not immediately tied into employment is actually counterproductive in terms of getting a job. The way I like to put this is the following formulation. The study of humanities actually capacitates you for getting full employment. We have no evidence whatsoever that the study of the humanities has ever incapacitated anyone. Maybe that is too strong. Somebody who really got caught up in Notes From the Underground or something, I am not sure, probably has become incapacitated; but overall, in aggregate numbers, there is no evidence that the study of history, literature and philosophy incapacitates one for gaining full employment.

Right after the report, we were happy to get a mailing from the Career News Network newspaper at the University of Texas, and we have gotten many other things like this. The headline is "The University of Texas Liberal Arts Graduates Move Ahead in the Job Market." Let me just read it to you for a second:

> A recent survey of 1,351 liberal arts graduates at the University of Texas conducted by the career center reveals that oft-heard pessimism about the market value of the liberal arts degree is unfounded -- 80 percent of the 1975-82 graduates in this study are employed full-time, 12 percent are full-time, students, 5 percent are voluntarily unemployed, and 3 percent are unemployed and looking for work.

The head of the career center told me that the 3 percent unemployment rate is lower than the unemployment rate for the graduates of the Business School at the University of Texas. It goes on: "Though it has been said that liberal arts graduates can expect to be teachers, that graduate students are under-employed, the data of this study reveal a much greater diversity of experience." That is really what you notice when you read this story in full -- not just that these liberal arts students were employed, but the diversity of jobs in which they are employed is really quite remarkable: marketing, business, general administration, computer programming, personnel, politics, science and mathematics, the military -- teachers, too, but only 6 percent.

But again, we do not say in our report -- and I would not say -- that we study the humanities because it will help us get a job. I would not want to take the argument and go too far in that direction. That may be the third argument why one should study the humanities. Take a broad array of courses in the liberal arts. It will not incapacitate you; indeed, it may give you skills which may later be useful. That is not the best and most important argument. That may be the academic counterpart to the Catholic teaching that it is best not to sin because it offends God; but if that does not persuade you, then you will burn in hell if you sin. It is not the best argument to make for the study of the humanities, but it is not a bad ancillary argument.

A better argument to make for the study of the humanities is that one, after all, will be living in a culture and in a civilization. As William James used to say: We do not want to be like the cats and dogs that wander around the library, having no idea what it is that surrounds them. We want people to be participants in our culture and our civilization, to be, if you will, active shareholders in that civilization.

But first, at least I think the first and most important argument for the study of the humanities, is neither of those, but something more important. That is an argument that has to do with the purpose of higher education. Generally, I still believe and persist in believing -- and I think a number of members in the study group agree with me -- that the major purpose of a college and university education is nothing smaller than to enlarge and illuminate your life. Students need to be reminded, particularly when careerism, I think, is in ascendancy, that no one the world has ever heard of became a career. They all became human beings who, a little older, had careers, had jobs; but one becomes a human being with a job, with a career interest.

Such an argument for the study of the humanities obviously puts a great burden on those of us whose responsibility is to teach it. It requires that we teach it with some commitments, conviction, and with some sense of the importance of the enterprise in which we are engaged. That obviously has implications for the humanities, the study of humanities, for scholarship in the humanities. Nevertheless, I think that unless we take that high road, that highest road, the kind of trend we point out in the report will continue. We will not be able to reverse this general decline of the best that has been brought out. Thank you, and I welcome your comments.

Discussion with Dr. William H. Bennett

Questioner: It appears that changes being discussed or implemented at the high school level may be important for attempts to revitalize the humanities, Do you agree?

Dr. Bennett: Good observation, and I agree. I think there are some grounds for optimism on all these fronts; but obviously, it will not do to say that the burden, the main burden, rests with the secondary schools. I saw a column, in a newspaper in North Carolina, that reported a survey of teachers on books and readings. They did a survey at the local college, a four-year college, and at one of the neighboring high schools. They had books recommended by the faculty at the college for students who wished to come to this college, and they had books recommended for seniors at the high school. Books recommended for the seniors at the high school were so far superior to the list recommended for those going to college, one almost thought the institutions ought to switch roles and responsibilities, given their differing estimates of student possibility. Obviously, the thing cannot simply be left to the high schools to make up. What we are really talking about is that so much of what we do in the humanities constitutes remedial work at the college level. I think that has to be admitted and faced up to. Some of this work ought to be done ahead of time; but if it is done ahead of time, that is no reason not to do more, not to go on to the more interesting work later.

Questioner: Do you think the problem is how little the schools that train teachers do to develop good teachers in the humanities?

Dr. Bennett: Do you mean by the schools that do this the schools of education? Let me say a bit more of what I mean by the problem. I think the best example I can give of the problem occurred to me when I was teaching. I used to get a note that came in June every year from the department chairman. It would say, "Thank you very much for your service in teaching the freshman course. We very much appreciate your sacrifice." Now, this is a spiritual problem. This is a real problem -- the notion that the further along one is -- and I think this is not only true in college but throughout the educational system -- the fewer number of student lives one touches, and the fewer number of course hours you have. With more status in the profession, you get to the point -- as Leon

Botstein says, where one spends all one's time at a research center such as the one I used to run, where one does not have any students at all, and this is as close to perfection as possible.

As I stated in my metaphor, this is a spiritual problem. We thought one very interesting response to this was what they did at Berkeley. They established a Chair in the Humanities and gave it to one of their most distinguished humanists, Professor Radkin. The privileges of the chair, as announced, were that Mr. Radkin would teach only freshman and sophomores, so that he would not have to bother with boring graduate students. This was very interesting. This was a symbolic statement by the people at Berkeley. Obviously, though, like the druid examples, it is not enough. One has to do more than that.

I really do think, though, that in some ways it is a spiritual problem or a problem of leadership. It is a problem of what is regarded as important in the profession, or what is regarded as important in that institution. As somebody who spent five years at the National Humanities Center, it became plain to me after a while -- granted that the group that passed in and out of the center is not fully representative -- that for many of us in the humanities, our first loyalties were not to our institutions, but to the larger world of our field or the professional association or group. Therefore, our priorities were to establish ourselves in the eyes of that professional group, rather than to do the kind of important business of householdership required at the institution. To turn that around required institutional leadership, departmental leadership.

I would say that, in general, what we need to do is diversify the many means, the several ways we prepare people to be teachers. I would not think first of trying to put the additional burden on the schools of education now to train people to be teachers in the first two years of the humanities. That gets off the hook people I would not want to get off the hook for that responsibility.

In the study group report, we talked a good deal about the responsibility of graduate school. We really, again, are reinventing the wheel. I do not think we are saying anything particularly new. We do talk about the emphasis in graduate schools, where very little emphasis is on teaching. In fact, in many places we found very little emphasis on a broad grasp of the subject, so that many people -- even if they were inclined to teach a broad survey course -- would not be capable of teaching it. Robert Birdsong of the University of Oregon wrote this part of the statement, and I think it is as good as I have seen. I think the emphasis has to be on graduate school as one particular target, but I realize it has to be on the profession at large. I do not know of a shorter or simpler way to do it. Obviously, institutions should do what they can locally.

Questioner: Do you think one problem may be that we have been too successful in educating people in the humanities?

Dr. Bennett: Could you say what you have in mind? Could you unpack that enticing phrase -- that we are being too successful?

Questioner: For example, perhaps we have solved the problem by educating people who can communicate their interests and ideas?

Dr. Bennett: Do you think that is the general condition of things in the humanities now -- that, for example, students are writing too well? That is interesting. I really had not heard that before. I did not get that impression. I get the impression that there are some signs, some hopeful signs, but not that we have turned the corner yet. One of the programs that we have been very happy with at the Endowment is our program of summer seminars, in which secondary school teachers spend four to six weeks on texts in the humanities. They do not do work on curriculum planning or principal-teacher relations. They work on the book. It has been suggested that we do the same kind of program for college teachers. We now have a program of summer seminars for college teachers, but it is organized in a somewhat different way. It is more focused on where research is going. Somebody, more than one person, has suggested that we ought to model the college seminar program on the secondary school seminar program. I do not know why I cannot quite bring myself to do that yet, except that it would suggest almost an admission of failure which I do not think is yet justified.

I wonder, though, whether the problem is now that our students want too much, and we are not ready for them; or whether it is more like what we said earlier -- that our own signals, our own messages to them are not sufficiently disruptive and intrusive into their own motivations, so that we are not getting their attention for the subjects they ought to give some attention to.

Questioner: When do you think college students should be exposed to the humanities?

Dr. Bennett: We do not specify whether the kinds of courses we are talking about ought to be throughout the four years or in the first two years. We point to two examples, well three examples, but two I will mention -- one is Brooklyn College, and one is St. Joseph's College in Rennselear, Indiana. At Brooklyn College, they do it all in the first two years. At St. Joseph's, it is spread over four. I think that is really an institutional judgment, a facts-and-circumstances kind of judgment.

One hopes, obviously, no matter which way it is set up -- particularly if it is set up in the first two years -- that this will lead to further enrollments in the humanities later on. The best evidence we have, and it is confirmed and reconfirmed, is that if you teach very effective, good courses in the humanities to a large number of students at the early levels, the freshman and sophomore years, enrollments in the humanities at the junior and senior level will increase or will hold. If students get the good invitation to the humanities early on, we will see enrollments in the humanities later on. Every time we look into this, this seems to be confirmed. I think that whether one does the required courses or the common curriculum -- or whatever it is one has in mind -- in two or four years is less important than the quality of what is done.

We found, with the help of Clifford Adelman at the National Institute for Education, a study that was interesting. It asked how much students know about the subjects which they do not take. The study had a chart of all the disciplines students might take in college, and ranked how much they knew about those subjects. At the bottom was the humanities. Geology was at the top. When students who had not taken a course in the humanities were asked what the humanities are, the answers ranged from "humane societies" to "Mother Teresa." These answers identified good causes and important things, but were not really dead center on what the study of the humanities is. In many cases, the answers showed total ignorance about what it is we do, and what it is we study.

That is why the point of entry, the invitation, the first exposure to the humanities is so critical. Students will turn away from the study of these subjects in large numbers without any good idea in the world of what it is they are about. Now once they know what we are about, if they want to turn away, that is fine with me. The reason, I think, that I am coming more and more to the notion that there ought to be requirements, is that I do not think students have the foggiest idea of what they are not taking when they do not take these subjects.

Questioner: Did you, then, identify the total number of credit hours which should be taken in the humanities?

Dr. Bennett: We did not set a number of hours at all for any institution because we just did not think that made sense. That was not the point; and we thought if we said every institution must have nine hours, this would be the fallacy of simple location, as Whitehead would say. Why is it nine hours? What is magical about nine hours? Why not twelve? Why not six? We also very plainly had in mind community colleges. What might constitute reasonable requirements in humanities over a four-year period might be too many for a two-year period. And we did not want to leave those institutions out because, to our knowledge, there are a number of community colleges that take the study of the humanities, the notion of some experience in these subjects, very seriously. What we think depends very much on the structure of the institution.

Do not think the report is weak-kneed. I do not think one can read the report and say there should not be something pretty substantial; but how much is really a local decision, and we could not make it. Besides, I think it would mean too simple a target. It begins to look a little too prescriptive, I think, if it comes from the federal government.

But why not non-western civilization? We talked about the study of non-western civilization, and the study group members thought that the serious study of at least one non-western civilization, with some degree of care, rather than a bus trip of the third world, would be more conducive, more salutary, than not. That should be part of a humanities requirement or expectation, once you have some exposure.

We unabashedly in the report speak abut the study of western civilization, and we were saying that does come first. Without a knowledge of it, we think we run the risk of educating students, or not educating students, so that they become strangers in their own land and aliens in their own culture. We do have a special relationship to western culture and western civilization. This is never a reason or excuse to ignore the best that has been thought and said in any other culture or civilization; but one must learn to recognize one's parents before recognizing uncles and cousins, and we were failing very badly in this.

Questioner: How do you convince employers and parents and students, all of whom are concerned about jobs, about the importance of the humanities?

Dr. Bennett: The question has to do with the fact that, while perhaps all of us in this room agree on the importance of the humanities, the rest of the world may not. Let us take the three groups you mentioned -- prospective employers, students and their parents. We had a series of conferences, at the N.E.H., that we sponsored with leaders of business and industry. They commented and insisted that the graduate of the liberal art college, the person that majored in history or philosophy, is not incapacitated for employment at that agency. We found they were telling the truth. They believed it to be true; and, in fact, many of them were graduates of liberal arts institutions themselves. I think it is still true that, if you had to pick the largest single group of people among the Fortune 500 chief executive officers, the prototype would be a liberal arts graduate of a small Midwestern college who majored in history, is fifty-three, and has three children.

But often the chief executive officer's message was not getting to the Director of Personnel, the person who is doing the hiring and sifting through the resumes. We said: You have got to do that. You really have to do that. In fact, why not hire liberal arts graduates to be your heads of personnel? That would be a way of having the door guarded by someone who is perhaps broad-minded.

Let me just say that this is an effort we continue to make. We carry on with these conferences. Mark Curtis ran a number of these conferences for us -- the American Association of Colleges ran these with the National Endowment, and I am sure that Mark could elaborate further on the points I made. We have to continue to press on it.

I also am impressed with the kind of evidence that the University of Texas Bulletin and others put out. We are collecting more evidence along those lines. Students need to know this loudly and clearly. They need to hear this emphatically. I do not think there is any reason to expect the students to act as anything other than students. I believe there is such a thing called student human nature, and I think it is some ways spiritually the counterpart to Hobbes state of nature. I think they sell themselves short; they underestimate themselves. One of the break-your-heart interviews that was done on Associated Press radio after this report came out was an interview with a student at the University of Minnesota. This is Marshall Jones of A.P. radio talking to a student at the University of Minnesota: What do you study? The student says: I am studying business. The A.P. interviewer says: So Mr. Bennett in Washington thinks you ought to be studying Greek literature and history. What do you think about that? He said: Oh, I think I should be doing that, too. I think it would be really great. Well, he asks, why aren't you? I have got to get a job. So you have chosen a job rather than this? What do you think the result of that will be? The student: Well, I think I will get a good job but I think I will be a less interesting person.

Somebody told this person that he had to choose between getting a job and being an interesting person, or being a deep person. Now somebody out in Minnesota is not advising students properly. The word has to get out. We are going to get this word out as fast as we can, because I think the evidence is frankly on our side.

That covers employers and students. About the parents, I am just not so sure. I would like to see a poll done of parents, to ask them what it is they want their children to get out of college education. One of the important documents I have read in the last six months is the sixteenth annual Gallup Poll on education. People talked about secondary education.

Parents were asked: What are the three most important disciplines that should be taught in the schools, the secondary schools. The three most important disciplines, according to the American public, are math, English and history. The poll also asked: What are the two most important things the secondary schools should do? The answers were: (1) teach students how to speak and write correctly, and (2) help students develop defensible standards of right and wrong. I could get behind those, too. I think that is pretty sound.

Now, there is some kind of falling off here. There is some kind of gap. If that is what the public believes, and that is what we believe, then why are things working out the way they are? I do not know. That is the briefest response I can give your large, good question.

Questioner: Do you think part of the problem is that courses in the humanities tend to be taught in large, anonymous classes and do not address issues which are important now.

Dr. Bennett: Let me answer the last part first. I do not think so. I think that whether we are talking about since World War II or before World War II, the challenge to us is to make it interesting and engaging. Students tend to start with the contemporary. That is the prejudice with which our students begin. That is another limitation of students. Again, we should not take that as a diagnosis. We should take that as a symptom -- that terrible present-mindedness as voiced.

As to the first question, I do not believe, myself, that successful courses in humanities are a function of class size. I have seen some of the most successful courses in very large classes. I do not think humanization or dehumanization is a function of size so much as the exchange that goes on there. I have seen very dehumanizing activities in very small groups, and often things that could not pass for the humanities. Besides, I would put the blame back on the teacher of a course with eighty students who does not know those students' names. Then there is some reason for the students to wonder whether the person does take teaching seriously.

I was teaching at the University of Texas in 1966. We had students do very long papers from the time of Thanksgiving to Christmas. They would do a fifty-page paper. Every so often a student would write a note in the paper. I remember one student I had who wrote, on page twenty-six: Mr. Bennett, if you are really reading this, I will buy you a beer. This was a student saying, I am taking this seriously; is anybody else taking this seriously?

When we did my only piece of litigation, I was working with my friend and colleague John Silber at Boston University. We were the first university to bring a successful lawsuit against term paper companies operating in Boston -- Termpapers Unlimited. Quality B.S. was another company. They were selling papers to students. We got the files. It was a marvelous thing. It was great litigation. We dressed up people as students and sent them in to buy papers. I dressed up as a student. We got to trial. We won the trial. They had to move to New Hampshire. So like most things that people really want in Massachusetts, it is now right outside in New Hampshire.

But then we did a survey. We did our own informal survey on courses in which students had bought the most term papers; and these were all known as the courses -- whether they were large or small-- where there was this silent agreement between students and teachers: If you do not bother me, I will not bother you. The students, in effect, who were buying the term papers -- apart from some few who were very cynical -- were really engaged in a kind of vote on the credibility of the faculty. Those faculty members who took the teaching seriously, who actually read the papers and commented, had almost no students buying term papers. Those teachers who did not engage in teaching got the vote of the student. The students said: If they are not going to teach it, I am not going to study it -- and went out and bought the paper. So, I think it has to do with factors deeper and more central to the enterprise than size. And there are so many great lecture courses in the humanities -- there is a great tradition of them -- that I would hate to see them disappear out of a too narrow fixation with numbers.

Dr. Davies: Mr. Bennett, this may be the first time you have heard from the higher education community about your report. I think you can leave here heartened. The questions are good ones, and people are thinking hard about what you said. We are deeply grateful to you for having taken time to come be with us today. Thank you.

Scholarship and the Curriculum

The Honorable John T. Casteen, III
Secretary of Education, Commonwealth of Virginia
Moderator

Panel on Scholarship in the Curriculum

Dr. John T. Casteen, III
Secretary of Education
Commonwealth of Virginia

This panel is a one-hour presentation concerning scholarship in the curriculum. To begin the program, I will have to ask you to shift gears somewhat. The subject areas covered by this panel are somewhat larger than those covered in Mr. Bennett's report because this panel addresses all of the liberal arts, including the natural sciences. Second, the specific topic for this panel is the relationship between faculty scholarship or research and teaching the curriculum. So we are looking at a relatively narrow aspect of a somewhat broader cross-section of topics within the whole structure of higher education.

The panel members include Professor Michael Hucles of Hampton University. Mr. Hucle's field of interest is the use of university or other primary materials collections -- art collections, manuscript collections, material culture collections -- in building a curriculum. He has published in recent times on the use of primary materials -- especially university-owned library and museum materials -- in the curriculum. He is of interest to this group in part because the primary collections of Virginia's colleges and universities are quite extensive, and because other collections that might also be of interest to faculty members are easily accessible in Washington, the Virginia Museum, major manuscript libraries, regional museums, and, -- especially in the case of Hampton University and Randolph-Macon Women's College and several other institutions -- in college-owned art museums. It happens that Mr. Hucles has been working in the Hampton University Museum which, as you may know, is one of the three or four most important collections of Afro-American cultural artifacts in our country. It is especially strong in 19th century and western African artifacts.

Also in the panel is Nancy Suttenfield, who is the Manager of the Education Section in the State Department of Planning and Budget. Another way to put it is that sooner or later she holds the purse strings for the money the state spends on education.

A third panelist is Professor Armstead Robinson of the History Department of the University of Virginia. He is currently on leave while serving as a fellow at the National Humanities Center in Research Triangle, North Carolina. Mr. Robinson is what is called a revisionist historian. He concentrates on Southern history, and he has just finished a major project with regard to the terminal phase of the U.S. Civil War. He was actively involved in the formation and operation of the Carter-Woodson

Institute at the University of Virginia, an institute that attempts to bring scholarship and the curriculum into close sync in developing new areas of instruction and research.

The final panelist is Professor Robert Marshak of the Physics Department at Virginia Tech. Professor Marshak is, as many of you know, one of Virginia's most distinguished scholars. He had a long and distinguished career in the classroom at the University of Rochester. He served for about a decade as the President of the City College of New York, of which he is now President Emeritus. He was in recent times Phi Beta Kappa Distinguished Lecturer on the circuit discussing the relations between American universities and emerging countries. He is also a member of the National Academy of Science.

Each of these speakers will address a specific topic of interest to him or her. I will ask Mr. Robinson to speak first. He is going to talk primarily about the processes of change within our disciplines and especially about change within the departments that support the disciplines. He will focus on the relationship between scholarship or research and the disciplines themselves. I expect he will concentrate on the social sciences. Mr. Hucles is next. He will discuss the use of primary materials in instruction, and especially materials from art museums and similar institutions. Mr. Marshak, third, will talk about research efforts as the occasion or cause of cross-disciplinary undertakings among faculties, and especially about the influence of new research on instruction. I suspect he may emphasize the natural sciences. Ms. Suttenfield will talk about what the state can do for you. If possible, I will talk briefly about some other alternatives for future research directions for the Commonwealth. So to begin, Mr. Robinson.

Dr. Armstead Robinson

University of Virginia

I teach Civil War history at the University of Virginia, and I am currently at work on what I hope will be the final revisions of a lengthy book on the American Civil War. On the surface, therefore, it would appear that there is a quiet functional interface between my research activities and my teaching. In fact, however, I am much less certain that all is as healthy as it might at first appear.

As part of my frenetic round of professional activities, I spend a good bit of time speculating on the future of higher education. The short-term prospects are not all that bright. For roughly the next decade we will see a steady decline in the number of eighteen-year olds graduating from high school. Furthermore, there is some evidence that interest in going to college is declining within this shrinking pool of potential college students. Finally, there is, from my point of view, a disturbing trend away from enrolling in courses in the core areas of humanistic and social scientific input. This triple whammy could well be the harbinger of very tough times, indeed, for the fields that have traditionally constituted the heart of the liberal arts. The endangered fields are the literature, language, and philosophical disciplines that take as their responsibility the task of informing us about our collective past.

Quite frankly we are losing the struggle to interest our occupationally-minded undergraduates in these areas, with the result that fewer and fewer of them either major in or enroll in the core of the liberal arts. The challenge of preserving the strength and vitality of those humanistic and social scientific disciplines which grapple with change over time will not easily be met, particularly since those of us in publicly-funded institutions get our resources on the basis of enrollment-driven FTE formulas.

If current trends continue, we could well see a steady erosion in the size, vitality, and strength of the liberal arts core at many of our institutions of higher learning. There are doubtless some who would argue that these trends reflect realistic adjustments to changes in the demands that society places on such institutions. I have had rather heated arguments with colleagues, usually from departments that currently have an abundance of student enrollment, who contend that we should conceptualize faculty resources as part of a market in which supply and demand ought to be allowed to determine which departments receive vacant positions. I generally have two responses to this line of argument. First, I try to point out that colleges and universities ought never to forget their basic function -- the preservation, the creation, the communication of humankind's accumulated store of knowledge. Second, I question whether we can allow the random results of uninformed students' taste to reshape the very fabric of university life, without running a grave risk that this new invisible hand will do great violence to our capacity to discharge the obligation that colleges and universities have to be society's protector, generator, and communicator of this store of knowledge.

Do many of us really believe that persons in their late teens know enough about humankind's heritage to be able to make informed judgments about which of the many sub-fields of humanistic and social scientific inquiry ought to be encouraged to develop or ought to be allowed to wither away? Given the stringency of resources that now seems inevitably to be our fate, there is no way of avoiding the vigorous arguments certain to arise over which disciplines and which sub-fields ought to be supported and which areas ought to be zeroed out. It must be candidly admitted that the humanistic and social scientific core disciplines are often not in very strong positions when the discussion of FTE allocations turns to the enrollment numbers. Whether collegiality can cushion the bitterness that will surely flow from such discussions is yet to be revealed. But it is clear that these arguments have to take place, and it is clear that the process of reallocation through internal attrition will impose itself upon faculty members, administrators, trustees and ultimately public officials.

How should the endangered liberal arts disciplines in colleges and universities respond to the triple threat described above? Since almost all of American higher education has been in a steady-state posture for the last several years, there seems little chance that the public or the private purses will open wide enough to spare universities and colleges the vigorous arguments that always arise when competing interests struggle over inadequate resources. Yet I for one believe that these discussions can be very productive, much in the fashion that a gardener's vigorous early fall cutting back is often rewarded with a renewed burst of springtime foliage. After all, do not colleges and universities pride themselves on the vigor of the intellectual discourse that occurs within their walls? I say to all of you that we must, within the next few years, engage in wide-ranging discussion about the nature and purposes of our education within an explicit recognition that the end result may well be a major restructuring of the organization and functioning of the academy.

It would be very nice if I could stop here, but I sense that my friend John Casteen asked me to speak today because he suspected I would not draw back from following my line of argument to its logical conclusion, however controversial. Let me begin by saying that I appreciate much of what William Bennett is trying to do in regard to stimulating discussion on the future of humanistic inquiry. I believe that he is absolutely correct to argue, as he has recently done so effectively, that colleges and universities must not allow themselves to become teachers only of career-related skills merely because students and the business community want graduates with that kind of education. Further, I believe he is correct to argue that the humanistic side of education has an obligation to teach content. Finally, I suspect that what he may have meant by content was once called civics -- that is an introduction to the complicated role that the educated individual must play in civil society.

Where Mr. Bennett and I part company, however, is on the kinds of humanistic research priorities that ought to be supported so that colleges and universities have the knowledge base to teach civics for the twenty-first century. Should not our choices be based on our best judgment about the content that will help reveal the relationship among social and political developments in the twenty-first century? While I am certainly no futurist, it does seem to me that life in the twenty-first century will require perspectives and values somewhat different from those that guided this nation's real leadership in the post-World War II generation.

On the domestic side it seems clear that American society will continue to expand the access that minorities and women have to the public spheres of power. I think it likely that minorities and women will play a much more active set of roles in the public side of economic and political affairs than has been the case heretofore. Insofar as it is possible to predict local social patterns, it seems likely that the momentum toward the internationalization of economic and political matters is irreversible save for the nuclear holocaust that no one wishes to see. Now if the internationalized civil society for which we try to prepare our youth will feature contacts with cultures and civilizations far different from our own, it makes sense to focus resources for research and teaching on those cultures and civilizations of which Americans know painfully little.

We should allocate resources and revise requirements, for example, so that every college graduate will have to demonstrate effective command of the spoken and written culture of at least one non-English speaking society. Similarly it seems short-sighted to designate research in women's and ethnic studies for de-emphasis. All of us would accept the notion that our students should know the essentials of European and American history, yet there would have been no American history without the European age of discovery. The European age of discovery is incomprehensible outside of a thorough knowledge of African, Asian, Latin American and Caribbean history. There would, for example, have been no Atlantic economy without the trans-Atlantic slave trade. How can we claim to be establishing research priorities for the education of our youth in civil society while at the same time ignoring the female half of human society and the non-white four-fifths of human kind. Going backward to focus on research about the history of affluent, Anglo-Saxon, Protestant men will not help our young people understand the 1960's and 1970's, and it certainly will blind them to the increasingly complex world that is to come.

I must close before John brings out the long curved hook. Let me say that I agree with Mr. Bennett's criticism of the dangers of excessive disciplinary specialization. But the answer is not to cut back on funding at the cutting edge of research, which is precisely what women and ethnic studies have been in many humanistic fields. Rather, the answer is to insist that the practitioners of these new methodologies develop clear connections between their research and the central teaching missions of the humanities. As we carry forward this most important work, the revelation, if you will, of the complex, I believe that broadly based research in the humanistic disciplines can and must remain an essential part of the agenda of American higher education.

Dr. Michael Hucles

Hampton University

As a member of the Department of History at Hampton University, and also as a quarter-time curator at the University Museum, I have the opportunity to go into the storage, pull things out for my classes and show them what we have in our collections. The university is indeed very fortunate to have on its campus one of America's most outstanding collections of ethnic art. This museum, by the way, is located in the historic Academy Building on our campus. I would like to invite each and every one of you to come by at some point and see it when you have the opportunity. This museum has also been a leading educational and cultural resource of America's south.

Representing diverse world cultures, the objects were gathered by students, faculty and friends of the university who sought an understanding of non-western cultures and traditions. As a result, the collections are unique in their quality of physical condition and documentation. Established in 1868, the museum collections have been an essential part of the university's teaching and research programs while also serving a significant public function. Specific application of the objects to course work was recorded by the museum curator, Cora Mae Folsom, in a series of annual reports at the beginning of the twentieth century. The museum, she wrote, was to "become not only a place of enclosed exhibits, but a living interest that breaks the monotony of classroom routine and makes a more lasting impression upon the mind of the pupil than is possible to the printed page or even the carefully chosen word."

Instruction in world cultures, geography and history, therefore, was made concrete by an examination of museum objects. What was appropriate then is still applicable today, and yet many within my own field of history are reluctant to consider anything but traditional two-dimensional sources of material. In an article originally published in Agricultural History in 1977, John T. Sledbecker suggested that historians "seem willing to believe almost anything as long as it is not three-dimensional." Perhaps this attitude stems from the fact that, according to Sledbecker once again, "many professional historians not only do not use, but do not know how to use three-dimensional evidence."

I see my task here today to give some suggestions, a model perhaps, for how material culture can be used within classroom instruction. There have been numerous approaches which have been suggested over the years as to how an artifact should be analyzed. In an article that was published in 1961, for example, Charles Montgomery, offered some further points in a constructed approach to artifact analysis. He was primarily concerned with the decorative arts when he suggested that attention be paid to the following: (1) Overall appearance, (2) form, (3) ornament, (4) color (5) analysis of materials, (6) techniques employed by the craftsman, (7) trade practices, (8) function,(9) style, (10) date, (11) attribution, (12) history of the object and its ownership, (13) condition, and (14) appraisal or evaluation. Although useful, I find this personally a bit cumbersome.

A refinement of this model, which I find more suitable for my own tastes, is suggested by E. McLean Fleming in an article which was published in 1974. Fleming suggested that his model uses two conceptual tools: a five-fold classification of the basic properties of the artifact, and a set of four operations to be performed on these properties. The five properties that he suggests are: its history, the material, construction, design, and function. The four operations to be performed on these properties are: identification, evaluation, cultural analysis, and interpretation. For Fleming the chief objective of identification is to provide accurate information about the five properties of the artifact. A variety of primary and secondary source materials as well as scientific equipment can and are being used in this identification process.

In extending our understanding of an artifact, according to Fleming once again, there are two kinds of evaluation. One has to do with judgments of aesthetic quality while the other consists of factual comparisons of one object with others of its kind. Both identification and evaluation constitute the special province of the curator. They, according to Fleming, provide the essential building blocks for conceptual generalization about the article.

Within the last two operations of the Fleming model, cultural analysis and interpretation, I find the direct link to our classroom instruction. Cultural analysis, according to Fleming, is concerned with the relations of the artifact to its culture, while interpretation is concerned with the relations of the artifact to our culture. To illustrate this point, I would like to draw upon some personal experiences in using artifacts in my World Civilizations classes at Hampton University.

In teaching a unit on Africa, I have made use of the collections in the university museum. Two artifacts in particular which I have used are Akan gold weights and an Akan stool. I had the impression that I was going to be before a little bit smaller group so I brought in a gold weight, but I do not think you will be able to see it. I will try to hold it up at any rate, so that you will have some sense of what it looks like. The gold weights are not made of gold, by the way. They are made of brass.

This particular one I like very much. It is a gold weight which illustrates a snake biting the breast of a bird. This particular gold weight is also a three-dimensional representation of a proverb. That proverb denotes patience. In other words that snake should never have caught that bird. The bird's greater mobility was negated by the greater patience of the snake. I use this particular gold weight to get into other areas of discussion with my class -- for example, the whole issue of proverbs themselves, and the use of communication skills within African societies.

One of the things that we can see in these proverbs is that they are sometimes fairly graphic in terms of body parts and functions. Some of this shocked many missionaries when they came to Africa. We see tremendous attention to how a person utilizes a proverb at the proper time, showing their own intelligence and good taste.

The other thing that I use is an Akan stool. Within Akan society stools were extremely important. The Akan lived in what is present-day Ghana, and one of the chief groups within the Akan are the Ashanti. The most important of the Ashanti stools was the golden stool, which symbolized the unification of Ashanti. The stool was used for just about every function one can think of. The stool was in fact a part of everyday life for the Akan. In fact, once a person died, the stool was supposed to be placed on its side so that another spirit could not enter into it. The stool, especially the golden stool, the most important of the Akan stools, was of such tremendous importance that, when the British conquered the Ashanti, and the British governor demanded that the golden stool be presented to him so that he could sit upon it, it suggested a tremendous insult to Ashanti -- because the golden stool was to be the embodiment of the Ashanti union itself.

So the way one communicates between different groups, different cultures is all-important for the kinds of messages one gives. For example, when the Ashanti tried to negotiate with the British, they had a particular axe, the golden axe of Ashanti, which they carried before them. To the British, that meant they were going to try to chop them up. By the same token, when the British were carrying shovels and picks to Africa, to the Ashanti that meant they were going to try and dig up Ashanti culture and civilization. So the way we communicate with one another is very important, and the use of artifacts can illustrate this in diverse cultures and areas throughout the world. I find that with the collections we have at the university, which range from all over the world, we have a unique opportunity to demonstrate that very possibility.

Another artifact that we have is a pair of satin shoes from China, only about six inches long. When you show it to your students, of course, they are going to think that it is the shoe of a child. But what it shows is the practice of the binding of women's feet. If you show this, a person can get a real sense of how small the woman's foot had to be in order to get into that shoe.

I find that the use of artifacts in teaching has been a tremendous boon to class instruction, and it opens up the doors to all sorts of possibilities for different areas within instruction. Also at the museum, about a year ago, we wrote a resource guide in which we tried to show to different departments throughout the university how they could become involved in the museum and using the collections as well as every phase of museum life. What we did was to take every department go through the catalog and pick out courses through which we could demonstrate clearly how that particular department could involve itself in the everyday activities of the museum. This goes for sciences as well as for the humanities. We have found since that time we have had some of the departments actually come and try to fit different things in the museum to their activities. So we have been fairly successful at this point doing something like that. I think with the kinds of collections that are available throughout this state, many instructors will find it possible to do the same thing.

Dr. Robert Marshak

Department of Physics

**Virginia Polytechnic Institute and
State University**

I think it is fair to say, in many ways, the scientific explosion of the last several decades constitutes the most remarkable outpouring of talent in the history of the human race. Indeed, scientific progress has been so great in some fields that we are asking questions that boggle the mind and both elevate and humble the human spirit. We have been emboldened to ask some mind-boggling questions because of the incredible unity of theoretical ideas that has emerged in our various sub-disciplines.

It is very strange to me, and a matter of wonderment, that fifteen billion years after the big bang on a planet called Earth, a living creature called homo sapiens, with a brain that has only a transitory existence, can ask serious questions about the creation of his universe, the evolution of his planet, the origin of his life, and the nature of his intelligence. We do not have the full answers by any means, but we have been so successful in our pursuit of knowledge during the past several decades that we have, by now, developed an extraordinarily rich culture of science whose essential ingredients, I believe, must become part of the intellectual equipment of an educated person in the modern world. This is only another way of saying that the place of science in liberal education in the 1980's and beyond must be accepted and must be multi-faceted.

What are the key features of the scientific culture that must be communicated to every liberal arts student? I would list three components: the nature of science and its intellectual values, the conceptual structure of science, and science and human values. I would introduce science into the curriculum by devoting one semester during the freshman year to exposing the student to the driving force behind scientific inquiry, the difference between science and quasi-science, and the nature of scientific method. Before the semester is over, the students should resonate to Warren Weaver's famous statement: "True science is an adventure of the human spirit. It is an essentially artistic enterprise stimulated largely by curiosity, served largely by disciplined imagination and based largely on faith and the reasonableness, order and beauty of the universe of which man is a part."

The student should be exposed to a clear discussion of the structure and methods of science so that the difference between science and quasi-science does become apparent. This is best done by the practitioner of science who is working at the research frontiers of his field. The practicing scientist can also most eloquently communicate to the student how essential intellectual freedom is to scientific progress. I am referring to things like the freedom to obtain and distribute information, freedom for open-minded and unfearing debate, freedom from political pressure and ideological expediency.

This one-semester course on the nature of science should be followed by a three-semester course on the conceptual structure of science which could be entitled, Man and Nature. This course would cover the biological basis of life and the principles of science. Rapid advances in these fields have brought a great deal of unity into the natural sciences. This, in turn, should make it possible to provide the students with some real insight into the underlying principles of modern natural science. The instructors in this sequence of courses should clearly be those who have made research contributions of their own.

There is one more essential ingredient of the present-day culture of science which must be transmitted to the undergraduate student seeking liberal education. That is the relation of science to human values. Most scientists feel that the recent explosion of scientific knowledge and technology has led to global problems of staggering proportions, and that every educated person should be made aware of this new dimension of the scientific culture. In a word, the scientific community must embrace, and many of us are embracing, what I should like to call a new scientific humanism -- a sensible mixture of intellectual detachment, which maintains the integrity of science, with social concern, which helps to insure that the fruits of scientific and technological advances will serve humankind. Some sense of this dichotomy and complementarity in the culture of science must be imparted to the liberal arts student.

I will propose that every upperclassman be required to take at least one seminar on science and human values. Under this rubric several one-semester seminars would be designed, with titles such as Energy, Ecology and the Environment, Science and Public Policy, and so on. These seminars would bring together students to consider the human consequences of the scientific and technological explosions, would be aggressively multi-disciplinary and would be team-taught by experts from different disciplines. Even one seminar within the framework of science and human values would do much to sensitize the student to the need for continuous dialogue of the scientific community with the humanities and social science communities to cope with our global problems. In my view, a truly humanistic approach to the exegesis of our modern dilemma requires a sharing of our intellectual resources from all branches of learning. The liberal arts students of the 1980's and beyond must begin to participate in this dialogue in the classroom.

I should like to conclude by putting forth one suggestion, which I believe will harness the best talents of some of the most active researchers and scholars in this Commonwealth -- will harness these researchers and scholars to the achievement of an important educational goal. One of the striking features of the modern explosion in scientific knowledge is the possibility of new and fruitful syntheses among various science disciplines. To meet this intellectual challenge, I would propose the development of a series of senior seminars on emerging syntheses in science that could be given on different university campuses of the Commonwealth. These seminars would speak to the major reorganization and potentially exciting groupings taking place among many of our scientists.

For example, in my field of elementary particle physics, we have reached the point -- in our understanding of the basic constituents of matter and the fundamental forces of nature -- that we can seek deep connections to astronomy, cosmology, and modern mathematics. The "big bang" hypothesis of the origin of our universe has strong observational support and provides a marvelous testing ground for the latest ideas of particle physics and modern mathematics.

The senior seminar on fundamental physics, cosmology and modern mathematics, team-taught by appropriate experts in the subfields, would not only inculcate in the student a broad outlook on these frontiers in physical science, but would also be very stimulating to the instructors themselves. In the life sciences there are a number of possible candidates for senior seminars on emerging syntheses in science. One good choice would be a seminar on the evolution of biological systems, including the evolution of animal and human behavior. This seminar would draw upon the talents of active researchers in modern genetics, biochemistry, and cultural anthropology among many other disciplines. The revolutionary developments in the computer field cry out for an emerging synthesis seminar, for example, Computers, Modeling of Complex Systems and Artificial Intelligence. Another interesting possibility would be a seminar on Archeology, Archeometry, and the Extinction of Flourishing Cultural Systems. Other examples easily come to mind. The point is that these seminars on emerging syntheses in science would introduce scientifically-inclined college seniors to the tremendous excitement of modern science, still within the broad confines of a liberal education. These seminars would engage the best researchers and scholars in the Commonwealth of Virginia in an educational process that would have lasting impact both nationally and internationally.

Ms. Nancy Suttenfield

Manager, Education Section
Department of Planning and Budget

Ladies and gentlemen, I was asked to make remarks today on how the state can support the liberal arts and sciences. In preparing my remarks, I read and considered at length Mr. Bennett's report report, **To Reclaim a Legacy**. In his report Mr. Bennett wrote that there are two basic prerequisites for learning -- first, good curriculum, second, good teaching. My remarks,therefore, will focus on the current state budget policies and practices that foster both good curriculum and teaching.

Beginning with good curriculum, I have four key points I would like to make. First, the study group found that the dilution of the humanities' curriculum was the result of institutional choice. This trend can also be reversed at the institutional level, without state-level intrusion. The institutions set their academic standards and decide the extent to which students should be exposed to the liberal arts and sciences. The institutions also allocate resources among various academic programs. There is a common misconception on many campuses that the state provides or cuts funds for specific academic programs. This is not true. The state budgets on the basis of broad guidelines by providing total numbers of authorized faculty positions, support staff, and total dollars for all instructional programs. The broad guidelines that the state uses to budget allow the institutions flexibility in responding to changing needs, prioritizing objectives and allocating dollars and personnel to specific academic programs that best meet the institution's overall mission. These broad guidelines also rightfully reserve to the institutions decisions regarding academics. Although the state could direct that increased dollars be restricted to liberal arts and sciences programs, this would be an unprecedented intrusion by the state into academic administration and management. I therefore suggest that the current state budget practices do foster good curriculum by reserving both academic and resource allocation decisions to the colleges and universities.

Second, although the state does not line-item budget for specific academic programs, the state can direct that funds be targeted to specific uses. In the current biennium the governor provided sufficient funding to fully fund library guidelines for the first time. Library acquisitions, however, are determined by the institutions. Therefore the state through this initiative is also fostering good curriculum.

Third, the state has, since 1980-82, been funding a program called Funds for Excellence, which is administered by the State Council of Higher Education. The purpose of this program is to provide special additional funds for colleges and universities, on a competitive basis, for new programs and projects that will enhance instructional quality. For the current biennium, 1984-86, $2.5 million dollars are budgeted for this purpose. These funds may very well be spent to enhance new projects in the liberal arts and sciences.

Fourth, Mr. Bennett noted in his report that, with enrollments dropping and with the effects of enrollment-driven state funding formulas, many institutions across the nation have elected not to reinstate rigorous humanities requirements, for fear of driving away students. Although Mr. Bennett's group found that this did not actually occur in the several institutions that have reinstated these rigorous requirements, it should be encouraging to the Virginia institutions to know that Virginia is in fact moving away from enrollment driven funding decisions.

Turning now to good teaching, I have two key points that I would like to make. In addition to relaxed humanities requirements in the colleges and universities across the nation, the study group found that exposure to the humanities in the classrooms was many times uninspiring to students. The group also noted that many introductory and lower-level courses were being taught by adjunct faculty and graduate teaching assistants, those who may not be the best equipped to inspire students. Again ,the group found that the cause of this was an institutional decision to serve more students per faculty dollar. I emphasize that this was an institutional decision. The state places no restrictions of any kind on the kind of faculty that teach specific courses at specific levels. Instead the state provides, to each institution, personnel authorization for a fixed number of full-time-equivalent employees. The institutions themselves determine the mix of part-time versus full-time faculty positions, and their allocation to academic programs.

The second point related to teaching is that the state also funds a special program designed to reward scholarship and good teaching. This program is known as the Eminent Scholars Program, and it, too, is administered by the State Council of Higher Education. For the current biennium, 1984-86, $4.9 million dollars are budgeted. Through this program the state provides, on a dollar for dollar basis, a match on endowment income designated for eminent scholars. This program is further evidence of the state's interest in and support of teaching excellence.

In summary, the state does support both good curriculum and good teaching in the liberal arts and sciences. Decisions regarding curriculum are reserved to the institutions. Decisions regarding appropriate faculty-student interface are reserved to the institution. The institutions manage personnel and budget at the line-item level for specific academic programs. The state does not. Finally, the state has targeted special dollars in its budget to libraries, model instructional projects, and scholarship.

In closing, I would note that in all of the successful models in Mr. Bennett's report -- Brooklyn College, St. Joseph's College and Kirkwood Community College -- no mention was made of budget or of new injections of funds. Instead, the success of these programs at these schools was attributable to faculty and institutional administrations working together for a common goal.

The Honorable John T. Casteen, III

Secretary of Education
Commonwealth of Virginia

For my own brief contribution to what is said today, I wanted to cover three points. First, I want to point out a basic dilemma in public policy; second, I want to make some observations about what colleges can afford to do within the kinds of limits that Nancy has described; and third, I want to suggest, merely for your consideration and possible future discussions with your president, legislators or others, three ways in which the state can support activities in the liberal arts, research activities for faculties, or scholarship of the kind that can change the curriculum.

The dilemma that I would point to is this. All of the colleges' mission statements in the public sector, and virtually all that I know about in the private sector, define three different missions: instruction, research, and public service. In the public sector, the funding model that we use to distribute money acknowledges by and large only the instructional part of the mission. We fund research in the land- grant institutions to some extent. We fund specific research activity such as the Center for Innovative Technology to some extent, but by and large research and public service ride on the shoulders of the instructional function in higher education.

Second, I offer an observation about what colleges can and can not afford to do. Nancy talked about the extent to which the Bennett report demonstrates that institutions are responsible for their own fate, and certainly all of us would agree that in the end that is the case. But it is also the case that, in recent years, presidents and boards have faced an extraordinary cost outside the liberal arts areas in implementing new programs to provide new technologies and new kinds of services--in the disciplines that have come sometimes to be seen as competitors of the liberal arts, in business and engineering, and so on. One observation about how the colleges can afford solid programs in the liberal arts is that we can develop ways to pay the real cost of change, especially in the most expensive disciplines. If you followed the state's budget procedures in the last two or three years, you are probably aware that in the public sector we have made substantial efforts to acknowledge what change really costs and to pay for it. But no one would pretend, I think, that we have been able to catch up with the costs, within higher education, of the kind of knowledge explosion that Mr. Marshak described in the sciences and the same phenomenon in other disciplines.

Third, focusing strictly now on the liberal arts, what can the state do to foster real excellence and especially to support research as a faculty activity? First, the state can support a collaboration among faculties in which the budget is not driven by enrollment. Specifically, the state could support for example, a statewide institute to develop a pool of senior scientists able to offer the kinds of senior seminars Mr. Marshak was talking about. Through their interaction, the quality of their own research would be enhanced. Through their work together on different campuses we would have a kind of cross-fertilization from one faculty to another, and we would begin to be able to discover on smaller campuses and in more isolated places ways to put together resources from across the state that would improve the whole of higher education. So, the first observation is that we can put state money into activities that do not depend on enrollment to operate, and that do bring together scholars from many different campuses -- private and public -- to undertake collaborative research, to work together in support of our high schools, to work together to improve the quality of instruction and the opportunities for research within our senior institutions.

The second observation is that the state can begin to explore the possibility of funding research, through the State Council of Higher Education, in the form of a pool -- like the Funds for Excellence that Nancy talked about earlier, or like the Eminent Scholars Fund -- for which colleges could qualify and out of which colleges could begin to support, at state expense, sabbatical leaves, research leaves, and the other kinds of investments in research that produce the fruits of scholarship this panel has described.

Third, in the future, in reconsidering such mechanisms in higher education as the Appendix M formula that we use to distribute funds among the public colleges, we can begin to calculate the cost of research that is actually done, and begin to add a factor to that formula to address the real cost of research. What would be the impact of that? The impact over time would be that boards or presidents and provosts could begin to reward -- with sabbatical leaves or continuing research leaves -- sound work, in the promise of future productivity for faculty members who have retrained themselves, reeducated themselves, who spend time in the kinds of institutes which would support the sort of thing Mr. Marshak was describing.

None of these objectives is out of reach, but all require a consensus throughout the state on the importance of the liberal disciplines as the core of a college or a university. All require a demonstration to legislative leaders and to others that this kind of faculty activity matters in terms of Virginia's own present life and future, and all require the colleges and universities to work together -- public and private, senior and community colleges -- to find common purposes, to assert that their first purpose in planning their futures is to guarantee the future vitality of their faculty and to agree on basic mechanisms for doing that.

Discussion with Panel of Scholars

Questioner:	The real problem we face in the liberal arts and sciences is reaching the entering student attending institutions other than the major research universities.
Dr. Casteen:	Don't bet that the proposals can not serve freshmen. One of the most interesting proposals for a state-wide institute that I have seen came from the community college system. It had to do with programs to revitalize the lower divisional offerings in the community colleges. A general observation that I would make about where research is done is this. Most colleges do pay for research. They do it through departmental set-asides for research one way or another. I do not think it is necessary to assume that if the state actually invested in sabbatical and educational leaves, the money would go only to the places that now have large, invisible research budgets. In fact, my guess is that the chief beneficiary might be faculty members who are overworked, and institutions which cannot afford that kind of activity. There is an interesting case to show how it can work right now. In the 1983 Office of Civil Rights amendment, the state is providing faculty development money for Virginia State and Norfolk State for advanced educational leaves for sabbatical and for other kinds of research support. Another way to put it is that institutions that have not been historically wealthy, when they face the cost of faculty research, can begin to develop realistic ways for faculty to build the kinds of programs the panelists talked about with, frankly, very modest state support in that case.
Questioner:	Why did you [Dr. Marshak] suggest that only scientists are capable of teaching a course on the nature of sciences? Other disciplines have important perspectives to contribute to this subject.
Dr. Marshak:	As you know, there are some people around in the academic community who believe there is not much difference between science and other types of activity. They think astrology, for example, should have equal status. I think people should have a chance to listen to astrology, but I think some of these efforts have gone too far. I have seen documents around where the real

distinction is lost between what happens in scientific work and how you arrived at conclusions and theories and understandings of natural phenomenon. There are some people who, for example, will go around talking about the Loch Ness monster being on an equal basis with some major experiment that has been confirmed by several hundred people. My point is that in many cases, when you have a course on the nature of science and scientific method, the practitioner of science is not teaching that course. Instead, someone who was really not an active scientist, but who is interested in scientific method or philosophy of science, tends to teach the course and sometimes goes overboard, not really understanding what has happened. To establish my credentials, I majored in philosophy as an undergraduate, received honors in philosophy and went into physics. So, I think I am trying to say something which some of you may know about.

Questioner: Will not an emphasis on the social and political aspects of science distract from students' need to understand the technical and historic aspects of science itself?

Dr. Marshak: I think your question really strikes at the very foundation of what I was trying to say. Sure, the history of science is important, but what I have been trying to say is that scientific advances have been so fantastic in the last fifty years, that, if you talk about value systems -- the humanists talk about value systems -- a major contribution could be made, in terms of the evolution of our value systems, of our world view, of religion, literature, art and so on. The basic point is that I conceive of these scientific developments not in terms of technological impacts -- which are tremendous and of course we have to deal with them; but, I see basic science, pure science, the development of science itself, as having to become a major part of a liberal education. I would like to see that be accepted by everyone, so that there is not this dichotomy always between the humanists, the humanities people, and the scientists. They really should be working together. In many ways the scientists have become very humanistic in their point of view. Most scientists are very worried about the technological impact of their work and join in trying to educate the public on the humanistic dimension. I am appealing for working together with the humanities and social science people. I am trying to deal with these consequences, but at the same time, with the very process of science -- the creation of science and the concepts that have emerged.

This is why I said that I thought a three-semester course in natural sciences is not so wild, because there has been a convergence of some of the concepts of biology, chemistry and physics, and others. In many ways the very rapid advances in natural science make it possible now to have a more interesting, coherent course for an undergraduate. By the same token, I was trying to indicate the very excitement of these emerging syntheses in science. I think that makes it possible to have a pretty interesting senior seminar. I am more scientifically inclined, I do not see everyone being interested in taking such a seminar. I think the one on science and human values should be required for everyone, but not the one on emerging syntheses. But that is an example, I think, of the broadest interpretation of what a liberal arts education, a liberal education -- not liberal arts, but liberal arts and science education -- should be.

Dr. Casteen: Thank you very much. Let us make some general observations about what may emerge from this kind of discussion, and then I will turn the program over to Gordon. Notice how broad the topics really are when you address the scope of the liberal arts. We have just simply touched some high points. The fact is that once we expand our sense of it to include the sciences, to recognize that the quantitative disciplines are often part and parcel of the liberal arts experience, we begin to see that the idea of renewing a commitment to the liberal arts is every bit as complex as the topics on the original program would suggest. Each of these speakers has argued for both individual and collaborative research as a component in building a program of scholarship for students. Each has argued for reexamining both the objects of our inquiry and the methods.

Armstead argued that women's studies and black studies both have specific materials to contribute to a curriculum and methods of inquiry. Mike argued in the same way about the use of material culture as an object of student scholarship in the classroom. And Bob Marshak has argued very persuasively, I think, that the sciences are rearranging themselves in a new kind of synthesis that is in itself complex enough to be a proper object to study, especially in the senior level of the undergraduate experience.

Finally, I suspect that each of them is positive in his own way that as the world changes the academy becomes increasingly interdependent. The methods of the anthropologist become of interest to the historian, the methods of the astronomer of interest to the mathematician, and so on. One object of a conference like this -- which is, let me say I think one of the most important the Council has ever convened -- one object ought to be to begin to show us the ways in which we are, as a state-wide community of scholars, dependent on one another in our core disciplines and not simply in financial and physical and other ways.

Presidents' Panel--
Looking Backward: Reflections on the Changing Curriculum

Dr. Stephen J. Wright, Chairman
Council of Higher Education
Moderator

Introduction to Panel of College Presidents

Dr. Stephen J. Wright, Chairman
Council of Higher Education

We have the rare privilege of having as our panelists for this session four voluntarily retiring presidents who have accumulated some forty-seven years of experience as leaders in their respective institutions. They are: Dr. Thomas A. Graves, President of the College of William and Mary; Dr. Frank L. Hereford, President of the University of Virginia; Dr. Alfred B. Rollins, President of Old Dominion University; and Dr. Joseph C. Smiddy, Chancellor of Clinch Valley College.

Our panelists have several very important things in common. Each has demonstrated superb leadership and will therefore be extremely difficulty to replace. Each has contributed his talents to the business community of the state through numerous directorships. Each is laden with honors, reflecting in a very limited way their veritable catalog of accomplishments. Each has paid his academic dues before being anointed for the presidency.

President Graves, for example, served on the faculty of Harvard for ten years, and then as Associate Dean of the Schools of Business of both Stanford and Harvard. President Hereford served as Professor of Physics, Dean of the Graduate School of Arts and Sciences, Provost and Vice-President of the University of Virginia, his alma mater. President Rollins moved through the ranks from full Professor to Chairman, serving in two State University of New York institutions, and as Dean of Arts and Sciences and Vice President for Academic Affairs at the University of Vermont. President Smiddy went to Clinch Valley as an Instructor in Biology and went on to become its Dean and later its Director before becoming its Chancellor sixteen years ago.

While our panelists have all these things in common, they also have some very striking differences. They have distinctively different leadership styles, and they represent very different disciplines: President Graves, in business administration, with a D.B.A. from Harvard; President Hereford, in physics, with a Ph.D. from the University of Virginia; President Rollins, in history, with a Ph.D. from Harvard; and Chancellor Smiddy, in biology, with graduate training from Peabody College. The moral of all this for presidential search committees, is, I think, that great presidents can come from any discipline.

We have asked these four distinguished educators to look back, reflect on the changing curriculum and share their wisdom with us. For it will, I am sure, illuminate our future.

Dr. Joseph C. Smiddy, Chancellor

Clinch Valley College

Speaking about our retirement reminds me of when I was going into the Army. I was working in this coal company, and I was telling a fellow on the street that I was going into the Army. He said "I'm going up and apply for your job." So I saw him about a week later, and I said "Did you apply for my job?" He said, " I went up there and told them I wanted to apply for your job, but they said you didn't leave a vacancy." So I think they are saying something.

It reminds me of one time when I was a high school principal. I took another job, and the president of the PTA said, "I don't know what in the world we are going to do without you. I just can't imagine this school without you being here." I said, "Oh, don't worry about that; they'll get a better person to take my job." She said, "That's what they said when they got you."

I come from a small college in the far southwestern part of the State of Virginia. We serve mostly mountain people, and most of our students come from coal mining families. Most of our students are first generation college students, so therefore we are not like any other college in the State of Virginia. We are unique in that we serve, for the most part, the Virginians that work in the coal mines. We serve people who, until the University of Virginia opened Clinch Valley College, for the most part had never had an opportunity to go to college. It has been a wonderful experience to have the opportunity to teach and work with people, people who wanted to learn. What a great opportunity that has been. You know a fellow came the other day to visit the college, and he said, "How long have you been here?" I said, "Well, I came when they opened the doors as a biology teacher." He said, "Yes, you've seen a lot of changes, haven't you." And I said, "Yes, and I've been opposed to every damn one of them." So I guess that is where I will start.

Being a part of the University, our college was born as a typical liberal arts institution and really never changed much, I am glad to say. Our faculty directs our academic program, and our faculty made the decisions as to what our offerings should be. These offerings have not changed very much. Now the students who come to our schools, certainly, as they have changed at all schools, have also changed at Clinch Valley. Back in the early days, of course, students came seeking a liberal education. Now they come, most of them, seeking business programs, very narrowly channeled, and want to take specific courses in these areas, get out and make money just as rapidly as they can.

I am so thankful that I had an opportunity to teach back in those terrible days of the late sixties, when students really wanted to make the world a better place to be. Now some of them went up dry creek beds, but it was so delightful to work with students who wanted to go somewhere besides the bank. I guess this may be an indication that it may be time for me to go, but really the students have changed as they have changed everywhere. As they come, they have abandoned, for the most part, the typical liberal arts and sciences programs, and we watched them as this decrease is taking place.

The general education requirements at our school have not changed; but when our school started, a student, to earn a Bachelor of Arts degree, had to have at least two years of foreign language. Then we had this great surge of students in business, and students going into a Bachelor of Science degree without languages. In self-preservation, the liberal disciplines had to make changes in order to stay alive. These changes were made, and we did start offering some Bachelor of Arts degrees without languages. But this has been, I guess, the biggest change that I have noted, the number of students wanting to take a foreign language.

More and more it is almost impossible to find interdisciplinary-trained teachers. When our college started, we could find professors who crossed these lines. They could teach liberal arts seminars and do it in a magnificent way, because a lot of them had been trained in the classics. But now it is more and more difficult to find these kinds of persons to teach, especially in small schools. However, I attribute that to the influence of departments. I think that I am only speaking of our institution. The worst thing that ever happened to Clinch Valley College was when we organized, and especially when we divided ourselves into departments. I really seriously believe that we have been turning out fragments ever since; because I believe that, instead of looking at students, the professors began to look at themselves and their discipline. I believe it has caused us to be narrow. I believe that we are not all we ought to be for our students because we have channeled the most important part of our lives into these specialized areas. That is a real problem.

Fragmentation, due to departmentalization, is a problem that I have noted at our school. Also, of course, we have had to face trendy education programs, programs that are popular. We get on these kicks. I remember, as a beginning teacher, that moving pictures were going to save the world, and now it's computers that are going to save the world. Now we have all got to take a computer course, or we are going to be illiterate. Well, I think we ought to know something about computers, but, I think we ought to know something about beauty, too. I do not believe we are spending very much money studying beauty. Two subjects that we never get around to are peace and beauty. We study war all the time in history. I do not ever remember fifteen minutes being spent on peace. And I do not remember very much time being spent on beauty.

There is not much money to support beauty in the State of Virginia, I can tell you that.

It has been very difficult at Clinch Valley College, and I will talk a little about that. Accreditation has not helped us. We tried to meet accreditation standards, and they, too, do not have much time for interdisciplinary programs, for programs which will stress the liberal arts. Also there is, definitely, a lack of support. I will give you our own case at Clinch Valley. The State Council of Education keeps whittling us down. First, we had to merge French and Spanish, because of low productivity, and have a degree in both in Modern Foreign Languages. Now they came back last year and said the productivity was low. We have lost that degree, and still they want us to be a liberal arts institution, they say. Well, I am telling you that, just in plain ordinary southwest Virginia English, they are not putting their money where their mouth is.

We have been hearing a lot about support for the liberal arts, but it is really not there. Instead of saying to our institution, "There are some things that you need in order to be a liberal arts college. You need art and music and language, and we need to fund these kinds of programs and help you develop these kinds of programs in an area where you are teaching developing students," we are not getting that kind of support. We are not getting the kind of support that really would enable us to meet the needs of our students in southwest Virginia.

I would like to say that I prefer a core funding approach, saying there are certain things needed in small colleges, and we are going to help you with these programs. This is preferable to coming back every year and saying, You didn't have eight majors this year, so we are going to take your program away from you. Now that sounds good if you are a bookkeeper. Well, I never have trusted bookkeepers to run academic programs. They are very good at keeping up with the money, but I do not believe that we need to turn over the direction of our institutions to auditors.

I think that we in southwest Virginia have been blessed by being a part of the University of Virginia. I think that has enabled us to have a liberal arts core at our institution. We would not, could not, have had it had it not been for the support of the university. I am very thankful for the kind of people the University has helped attract to Clinch Valley College. I think that, when it comes to supporting the humanities and especially in our colleges today, we need to look very carefully at the way we fund these positions. We need to look and see what kinds of courses we need to offer. We need to take into consideration the kinds of small institutions that we have at Clinch Valley, and the needs of these institutions.

I do not know why our students come to us the way they do today, wanting to be narrowly trained. Some people would point the finger at industry, but that is just not true. I have heard more corporate presidents say they wanted English majors to come and work for them than I have read where they said they wanted vocational people to come and work for them, to be their managers. But still the students come to us wanting to be narrowly trained. I do not know if that is a grass roots movement. I do not know if it is anti-intellectual. I do not really have the answer to that problem, but for the most part our students do not come to us wanting a broad education. So I think it is our job as educators to convince our parents and our students that if they leave us not being able to appreciate the sunset, then we really have not educated them.

Dr. Thomas A. Graves, President

The College of William & Mary

You all ought to know that Frank Hereford and Al Rollins and I are speaking under protest this evening. We looked at the program and saw that Joe Smiddy was last on the program. We thought that is exactly where he should be because it is not fair for Joe to upstage all the rest of us in going first. Yesterday afternoon I was worried that Steve might do this to us, even though I knew that Joe was going to go last. But, just in case, I went into the box I have in my desk in my office at William and Mary to see if I could find a story that would come anywhere near meeting Joe's standard. I got out the whole group of little pieces of paper, and every one of them I had gotten from Joe earlier.

So I was plumb out of stories until I was shaving this morning, and I always listen to a talk program while I am shaving. It is a couple of guys down in Norfolk somewhere. I find out from them what the traffic is like in the tunnel. I do not know why that is important to me, living in Williamsburg, but anyway one of them was telling the story about how this duck went into the pharmacy. He asked the pharmacist for some chap stick. The pharmacist handed him the chap stick and said, "How would you like to pay for it?" The duck said, "Well, just put it on my bill." If you can laugh at that, you do not need a liberal education.

William and Mary is 292 years old. We are coming up to our 300th anniversary. I decided I had better retire before that happened because I knew that the new president would have to raise a heck of a lot of money--that would go over the top in 1993, and I have done enough fund raising in my day. I said that it is time that somebody else take on that big, big assignment.

We are one of those venerable institutions that Gordon spoke about this afternoon. He also mentioned that some of them were also venturesome. I am not sure William and Mary is venturesome. I met with a couple of our Deans of Arts and Sciences. We have two Deans of Arts and Sciences, one who is dean now, and one who has been dean for a number of years until he went back to teaching this past year. I met with both of them about a month ago, and I said, "Tell me what has happened to the curriculum in Arts and Sciences in the fourteen years I have been president here." They said, "Nothing." You know that is embarrassing.

I quizzed them on it, and it is true. Really very little has happened to our curriculum. We had a major review of the curriculum in Arts and Sciences in 1968-69, shortly before I arrived there, and some significant changes were made. We had another review about seven years ago. The faculty really looked long and hard, gave a tough examination of their curriculum, and concluded that, if nothing seems to be wrong, don't tinker with it. They really made no changes of any significance at all. I am not complaining about it. I think there is a reason this is true. Back in the 1960's, when so many colleges of arts and sciences were making major changes in their curriculums, many of them were abdicating, in my opinion, their responsibility for deciding what is the best kind of liberal education for a young man or woman. Our faculty did not. Our faculty held on at that time to such things as certain requirements in each of the major areas of arts and sciences. We maintained certain requirements as far as concentrations are concerned, and, as a result, we have not had to really tinker with it very much since.

You should know that three-quarters of the students at William and Mary are in arts and sciences on the undergraduate level. Three-quarters of the faculty are, too. That was true with about 75-76 percent in 1971; it is down to about 72 percent now. So, there is really very little change. William and Mary has had for a long time a very strong commitment to the arts and sciences. I think that is going to remain. The curriculum is conservative. It is traditional. It was in 1971. I think it still is. I am not apologizing for that. All of our undergraduates, in their freshman and sophomore year, are in arts and sciences. They do not concentrate, or major, until their junior year. Then they can major either in a specialty in arts and sciences or go into a business or an education major. All of our students, back in 1971 and again today, must provide evidence of proficiency in writing to get a William and Mary degree. The faculty is rigorous in how it examines for writing, not only in the courses in English, but in all the courses. All of our students are required to show proficiency in a foreign language before they graduate. That has held strong even though it has been tested a couple of times during the past several years. All of our students are required to show proficiency in physical education. Those are the three requirements.

All of our students, no matter what they major in, must meet certain area and sequence requirements in each of what we call the broad areas of arts and sciences -- humanities, the social sciences and the natural sciences. We ask all students to take eleven courses across the humanities, the social sciences, and the natural sciences. Our intention, of course, is that each of these men and women, by the time they graduate, should be broadly and liberally educated -- prepared, therefore, the faculty hopes, to better engage the challenges and some of the opportunities of living and making a living.

All of our students also must meet certain concentration requirements. That is about as far as we go. We call that general education. Our faculty considers that the minimum educational experience one should have at the time he or she graduates.

Our students have never raised any questions about that breadth or concentration requirement. I guess probably because they know that is what William and Mary is like before they get to us. They do not come unless they are prepared for that amount of breadth and depth in the arts and sciences. I have been pleased to see, frankly, that the employers who come to our placement office to recruit our graduating seniors do not raise questions either. They are searching for that kind of background. I guess what I am saying is that we feel comfortable at William and Mary that there is a place within the system of higher education in Virginia for this kind of education. It is certainly not for all, and I think it is terribly important that all the institutions in Virginia not be like William and Mary. But I am glad that there is a place for it here.

Now within that, and I do not mean to sound complacent, there is a lot of activity, a lot of stress and strain, a good deal of argument at times, and some real problems with this kind of curriculum. You know what happens, as you have all faced it, when there are significant shifts, as there have been in recent years, in student interests. It is very difficult, indeed, to pick a faculty member in Spanish and retread him or her in computer science. When you are like William and Mary, and you are not growing (and we have grown very little over the last fourteen years in number of students), and you know that it is the number of students which drive the formulas determining the number of faculty, your faculty is not growing. You get very hard pressed indeed when a significant increase occurs, as it has in recent years, in business administration, economics, and computer science. You get very tight indeed. It creates some extremely difficult budgetary problems. The largest single growth area in the College of William and Mary is in the School of Business Administration. The School of Business Administration is also the youngest school, by far, at the college. It was started in 1968-69. You can imagine some of the problems that can create.

There have been some changes at William and Mary, over the fourteen years, that affect the curriculum. There is better teaching going on now than there was fourteen years ago -- better for several reasons, I think. First of all, our faculty are doing a lot more research, and they are doing a lot more research because we have a lot more money available for them to do research. Research in the long run means better teaching. We have today higher, more rigorous standards for promotion and tenure than we had fourteen years ago. That is adding up to better teaching. Our faculty members are more experienced. The growth that took place at William and Mary occurred in the late 1960's. They were all young faculty members, and those young faculty members are all now middle-aged faculty members. Some of them are in mid-life crisis, but they are good teachers and have become better through experience.

I think better learning is going on, too, at William and Mary than it was fourteen years ago. Partly that is because of the better teachers, but for some other reasons, too. Our students today are much more serious, much more intent on getting a better education than they were back in the early 1970's. They are much more demanding on the faculty. If there is a faculty member who is not up to snuff, the students let him know it. They would not have done that back in the 1970's. Another reason I think that better learning is going on is more emphasis upon better writing. That is forcing better learning in every area of the college. I think another reason is that we are putting a lot more emphasis, mostly at the request of the students, on interdisciplinary courses, interdisciplinary majors, double majors, team teaching, and a variety of ways in which learning can be more exciting, more stimulating, more fun. Also, thanks to the General Assembly of Virginia, teaching and learning facilities are a heck of a lot better than they were fourteen years ago. The laboratories, the classrooms are much more modern, in much better shape in terms of the environment. That makes a lot a difference, indeed.

As I mentioned to you, we had one review just before I got there. We had another review about seven years ago. There will undoubtedly be another major curriculum review in the next two or three years, when a new president is in place. I have no idea whether there will be any significant changes in the curriculum. I can think of a few areas in which I hope there will be, and I will come to that in a second. Let me just mention a couple of other aspects about the William and Mary situation as far as teaching and learning is concerned, because it does relate to the curriculum. As in 1971, virtually all of our courses at the undergraduate level are taught by full-time members of the faculty. We do not use teaching assistants except in rare circumstances. Partly that is because we have very few Ph.D. programs, and very small Master's programs, so we do not have the opportunity. But for us this is a good thing. It means that our best teachers are teaching freshman and sophomores. For us this makes very good sense.

We have had almost no grade inflation at William and Mary. Students complain about this. It is still very hard to get an 'A'; but fortunately the graduate schools and the professional schools where our students go when they leave us are aware of that fact, and this has not been a problem. The students go on in large numbers, sometimes, I think, in too large numbers, to graduate schools and professional schools.

Let me mention just three or four problem areas, and then I will be quiet. Over the last fourteen years, probably the most significant change at William and Mary has not been a curriculum change. It has been the fact that William and Mary has become a University in how it looks at itself and how it behaves. Back in 1971 it was essentially an undergraduate college, even though it did have some professional graduate schools. The Business School, the School of Marine Science, the School of Law, the School of Education all have developed tremendously. A lot more resources have gone toward them than before. They have grown in size. They have grown in stature. Arts and Sciences was already good in 1971. Arts and Sciences is still good. What has happened is that the others have come up. This has not meant any absolute loss in Arts and Sciences; but, among Arts and Sciences faculty, it has led to some morale problems. Some faculty members understandably have felt they have lost their very special place in the sun which they had before. Undoubtedly Arts and Sciences is receiving less of the percentage of the total pie of William and Mary, in terms of budgets, than before. They are certainly not receiving less money, but less relatively in terms of the total pie.

I mentioned the faculty is older. That is good because they are more experienced, but an older faculty, as you all know, sometimes means that you have to work especially hard to keep it exciting, and enthusiastic about what it is doing. I see that as one of our major challenges in the years ahead. It is indeed hard to be both venerable and venturesome at times.

I worry that the curriculum is not as exciting as it should be. Put it another way -- I sometimes worry that our students are much too serious in their pursuit of education, and not having as much of a joyful time as I think an undergraduate education should be. That is another challenge that lies before the faculty and the new president.

I wish in the years immediately ahead we could get Dr. Robert Marshak down to William and Mary, to get him to talk to our faculty about some of his exciting and innovative ideas. I hope we can get Gordon Davies down to talk with the faculty about some of his ideas. There is a lot of ferment out there which William and Mary needs to keep its eyes open for, needs to keeps its options open on.

I think William and Mary is in good shape today. The liberal arts are alive and well there. I just hope, and I believe, we can remain creative and innovative. This afternoon, one of the panelists said that the purpose of liberal education is nothing smaller than to enlarge and illuminate your life. I think that is a good definition. William and Mary remains committed to doing that, and I am very hopeful that it can continue to do so. Thank you very much.

Dr. Frank Hereford, President

University of Virginia

One of the strongest features of the system of higher education in Virginia, I think, is the diversity of its institutions and institutional missions. So you should not expect to hear the same thing from all of us here tonight. Each of our institutions is different. I think that is something we can be very proud of and can defend in a very reasonable way in this state. You have already heard Joe Smiddy talk about the fact that there is a tendency for students to have more of an interest in business and subjects of that sort, as distinct from liberal arts. You have heard Tom Graves say that is not the case at William and Mary. That is not the case at the University of Virginia, either. We are perhaps atypical of the national trend recently in which there has been a lessening of interest in the liberal arts.

But, I would like to go back a little further than fourteen years -- as Tom did in talking about the fact that not much has changed in at least the disciplinary structure of liberal arts. I will go back 170 years to the time of Thomas Jefferson. I learned early on at the University of Virginia that you do not talk about anything whatsoever without mentioning Thomas Jefferson, so let me do that at the outset. In 1814 he wrote a remarkable letter, to his nephew Peter Carr, in which he outlined what he thought a university should consist of. Indeed, it is the pattern that his own university followed, which subsequently all universities in this nation followed. In 1814 there was hardly a university in the United States. There were colleges, but not a true university. Jefferson's idea, set forth in that letter, was that a university should consist of a single school, what we today call a liberal arts college, surrounded by a group of professional schools. It is even more remarkable than that, because he said that there should be three divisions in the single school: (1) language, including ancient and modern languages, history, belles lettres, literature and rhetoric (that is essentially what we refer to as the humanities today); (2) mathematics -- including pure and applied mathematics, physics, chemistry, botany, zoology and mineralogy (basically what we think of as the natural sciences); and (3) philosophy, including ethics, the law of nations, government and political economy (which we generally refer to as the social sciences today).

That pattern really has not changed since 1814. With regard to the structure of liberal arts, at least as far as the disciplines that we think of as defining liberal arts, they have persevered since that time. Now that does not mean, of course, that the subject matter that is taught in these various disciplines or in particular courses has remained the same. Obviously, there has been an enormous explosion of knowledge. What is taught now as political economy is in no way similar to that taught 170 years ago. Remember the old story about the professor who gave the same course year after year and always on his examination asked precisely the same questions. Now a student who admired the old gentleman thought he should know this. He went to him and told him that every student who had taken his course through the years knew what questions would be on the examination. The old gentleman said, "Oh, well I have realized that. I know they have known those questions, but what they do not know is that every year I change the answers." I also think of Edgar Shannon, who preceded me as president of the university, telling me that, after his years of the presidency when he returned to scholarship and English and his particular interest in Tennyson, it took him two years to catch up with what had been going on in Tennyson scholarship. I am confident that was true.

So all of that has changed; but that basic sort of structure, what we think of as the liberal arts, the disciplines at least have not changed in that period of time. I think it is rather remarkable. To me it suggests that, whatever conclusions we might attempt to draw from the changes over the past ten or fifteen years -- set forth for example in the recent report on the conditions of excellence in American higher education. Whatever those changes may be, may not necessarily mean that there is setting in a long-term change in the liberal arts curriculum.

There has been a change in the way students make selections of the fields they are going to major in. I am going back to Jefferson once more, because I think you might find this interesting. In that same letter to Peter Carr, he said that the learned class may still be subdivided -- he used the word "still," indicating that he might have expected there would be a change -- the learned class may still be divided into two sections: (1) those who are destined for learned professions as a means of livelihood, and (2) the wealthy who possess independent fortunes, and who may aspire to share in conducting the affairs of the nation, or to live with usefulness and respect in the private ranks of life. Both of these sections will require instruction in the general school -- the wealthy to qualify them for either public or private life, the professional because they are the basis of their future profession. I think we can all be grateful today that accessibility, which is one of the cornerstones of our system of higher education in Virginia, basically means that wealth has been eliminated insofar as a factor in the choices that young men and women make in pursuing higher education.

We are particularly discussing at this conference the liberal arts. Whereas the disciplines that define the liberal arts have not changed much in many years, it is certainly true that the divisions which separate them and the interplay among them have changed a great deal. Turning to my own institution, we have programs, degree programs, in things such as biophysics, and neuro-science, area studies, East Asian studies, Afro-American studies, and another fairly new field, linguistics. All of these are subjects in which students can get degrees now, and probably could not have fifteen or twenty years ago. Yet there is no department associated with each of these subjects. Departments may become so associated in the future, but I do not think it will happen very fast, because it has not happened very rapidly over the past 100 years or so. In spite of these developments, the integrity of those basic disciplines has remained and endured over all these years -- in spite of the enormous explosion of knowledge, and the enormous advances that we have had in the analysis of the knowledge that we have, the recording of it and its dissemination. Like Tom, I think that something fairly solid exists in the structure of liberal arts, as it exists today, and I do not think it is too likely to change.

As far as students are concerned, their interest in liberal arts, I think you all know that there has been a change nationally in that regard. Students today tend to favor engineering and business to a degree that was not the case ten or twelve years ago. I think the job market has had an influence on that, but I think there are other factors as well. One of them is certainly the fact that a dozen years ago we were just emerging from the Vietnam War, when young men and women thought that our society had many ills and it was their job to cure all of them. Somehow they felt that disciplines such as engineering or business, which were materialistic, were not relevant to their concerns. That is a change that has taken place in the last ten or twelve years. Today that is not the case. They seem today to be willing to bite off a piece of this whole thing and have a go at it. That is how, I think, engineering and business, disciplines of that sort, have become more popular than they were ten or twelve years ago.

I would like to say a word or two about computers. There is a great deal of talk about computer science, computers, computer literacy and the impact that computers are going to have in higher education. I do not think they are going to have a great impact on the liberal arts curriculum or, in fact, the curriculum throughout a university. Computers are basically tools which enable students, scholars, faculty members to analyze knowledge, to record it, and, coupled with advances in communication, to disseminate it in a much more effective way than was ever the case in the past.

When you think about the changes that have taken place in the past century and a half, I do not think the advent of computers is quite so astounding as it is sometimes made out to be. Think about the library resources that are available now which were not available 150 years ago. Bear in mind that there has been no enormous change in what we think of as the liberal arts curriculum. At my own institution, rather than a few thousand volumes in the library, as in 1820-22 when the university opened up, we have over two million. We not only have over two million items in the library, but they are all immediately available. In fact, computers have helped make them available, not only at the institution where a student might be studying, but wherever it may be available in all libraries. In any event, that enormous availability of recorded knowledge to me is an astounding advance relating to education, higher education, and yet it has not made an enormous impact on what we think of as the disciplines that constitute the liberal arts. I do not think computers are going to have that type of impact. They are going to have an impact, however, in making education more effective and certainly in making the dissemination of knowledge and its analysis more effective.

I have mentioned the fact that there have been changes nationally, and a decrease in the number of men and women who have elected to take degree programs in the liberal arts. Going back to my own institution, I will say that, like William and Mary, it is atypical. It has not followed this national trend. As a matter of fact, the percentage of undergraduate degrees awarded in the liberal arts, as a percentage of all baccalaureate degrees at the University of Virginia, was 62 percent ten years age and it is 64 percent today. The percentage of degrees in the humanities has gone from 40 percent to 39 percent, the natural sciences from 16 percent to 18 percent, and the social sciences from 39 percent to 41 percent. There are a few exceptions: economics is up from 9 percent of the degrees ten years ago to 13 percent today, foreign affairs from 2 percent to 7 percent. On the declining side, psychology is down from 14 percent to 10 percent, history from 15 percent to 10 percent. On the whole, there has been very little basic change in the election of majors on the part of students.

The final comment I want to make relates to liberal arts in the professional schools. I am going to use our School of Engineering and Applied Sciences as an example. For many years, we have had a humanities division in our School of Engineering. Until about ten or twelve years ago it was primarily concerned with oral and written skills. I am delighted to say that over the past decade, that emphasis has broadened to include the historical and cultural context out of which engineering and technological advances develop. Also, it has expanded to include a senior thesis written on a research project. There is a specific requirement in this senior thesis -- not only must the research project be outlined, but it must address specifically the relationship of that project to historical precedents and the impact it will have on our society today.

What I am saying is that there is creeping into professional fields a demand for a greater degree of education in the liberal arts. The same thing is happening at the graduate level. For example, in medicine recently there has been a national commission that has made a strong recommendation that young men and women preparing themselves for a career in medical school should be urged to take more liberal arts courses, and less of those science courses that have traditionally been required to prepare them for medical school.

I would like to say a word or two about our students. They are absolutely remarkable young men and women. They are highly selective of course. I think of them as really pushing our faculty in many regards. We have a very low attrition rate. The great overwhelming bulk of students get degrees, and they have sustained an interest in the liberal arts. I have no real explanation as to why that is the case. I do think that at an institution the student body has a great influence in guiding succeeding generations of students. Once a tradition is established within a student body, which may favor the liberal arts to a greater extent than is nationally the case, it is likely that group of students will pass on their interest in the liberal arts to a succeeding generation.

Certainly, it is true that at the University of Virginia, in the liberal arts our greatest strength is perhaps in the humanities-- although we like to think that all of our schools, all of our disciplines are good. That, of course, attracts good students. The fact that we do not follow the national trend is nothing new. The University of Virginia was one of the last institutions in the country to give up literacy in Greek and Latin as a requirement for a baccalaureate degree. As in the case of William and Mary, when other institutions recently have been reestablishing the foreign language requirement, we never gave it up. I do not say that in a boastful sense, because we often have failed to take prompt advantage of nation trends which have great promise. Nevertheless, it is the type of institution that changes very slowly, and I suppose, on balance, I am pleased that is the case.

Dr. Alfred P. Rollins, President

Old Dominion University

About eight and a half years ago, when I came into the state and had an experience of following Joe Smiddy, I asked Richard Bagley of the Appropriations Committee for one favor: that he should never schedule me on the same day as Joe Smiddy again. But here I am.

I am going to take a longer range view of the topic than some of my colleagues. Perhaps that will be because so much of my experience has been in other states and at other times. I started out a long time ago, thirty-eight years ago, as an instructor in history -- with a butch hair cut, a clean shave, muscles, an undeveloped brain and a lot of callow and naive enthusiasm. I still have a lot of callow and naive enthusiasm, although my whiskers have grown, my hair has grown and my muscles have atrophied.

Before I get very far into this I want to say some very critical things about what has happened to higher education in the last thirty-eight years. I want to say two things first, however. The first is that I have come to know that an awful lot of good things go on in lot of classrooms under the guidance of many good professors. Presidents tend to forget that. We develop a kind of perverse and inverse romanticism that makes us believe that, if we don't hear about it, nothing is going on. One of the reasons that presidents are so critical of higher education is that they really do not know much of what goes on in their own classrooms. I want to say, second, that if there have been sins in higher education in the last thirty-eight years, I have participated fully in the sinning. So if I make criticisms of what has happened, I will be criticizing myself as much as any of you.

I participated vigorously in the production of a new Ph.D. program in history just about the time the market for historians disappeared. I single-handedly developed an experimental college at the University of Vermont, without the approval of the president, which the faculty quickly abolished as soon as I left town. I have been in on other things of that sort. I won't say that it has not been a good experience. A lot of good things have gone on.

I have been a little amused by the talk about the liberal arts and the professions. I have done a little inventory during the day here about my own family. We have an English major who is a preacher. I was a comparative literature major, and I spend most of my time raising money for a $60 million a year institution. I have a son who is a history major, and he is a business officer of a major university press. I have another son who is a history major, and he is doing political and legal research for a national business organization. I have a daughter who is an art major, and she is a food service manager in northern Vermont. I have a step-daughter who is a drama major. She is an artist's agent. I have a son-in-law of whom I am very proud -- because his first job was collecting small loans for a small loan company, and my first job was collecting loans for a small loan company. I am sure he will have his $60 million corporation some day soon. Right now he is managing a woodchip business in northern Vermont. We all trained for our professions as either English or history majors -- which makes me feel not quite as dimly about the professional opportunities for liberal arts people as folks sometimes indicate in public discussion.

My experience over thirty-eight years breaks down roughly into three parts. I think, as a historian, there are three kinds of definite periods that we have all lived through. The period from 1945-1965, that post-war period of population and knowledge explosion, was an extremely exciting time. It was a great time to live through, a time of general energy and great change. I have been fortunate always to have lived in institutions which were at the cutting edge of change. I think my experience has been very different from that of Frank or Tom. I have always been in the middle of some reasonably chaotic battle in which things were changing. I have certainly not been in the traditional situations they have experienced at the University of Virginia and the College of William and Mary. These changes made me aware that we inherited, those of us who came into education in the 1920's and 1930's, a system which had already cast itself in certain unfortunate ways that are still bothering us. In the first place, we had learned in the United States, long before the great depression, to sell higher education to the public for the wrong reasons. Long before we had our modern problem of vocationalism and liberal education, we had learned to tell the American public that, if they went to a good college, they would make more money, get a better job, have more prestige. If your sense of humor is with you, remind yourself every once in a while that the American public knows nothing about colleges except what we have told them. We told them some very dangerous things.

Now we are in a situation where you do not necessarily make more money, get a better job, or have more prestige. So suddenly we are back talking about the intrinsic values of the liberal arts, which is something we might have done in Charles Eliot's day. Charles Eliot developed that marvelous thing called the elective system. The elective system was the nation's answer to the knowledge explosion. When there were too many courses to require them all, and nobody wanted to take responsibility for saying that anything was more important than anything else, President Eliott (being a good Harvard president) decided the thing to do was to let the students choose. If the faculty could not express priorities and values, certainly those callow, undereducated students could do it for them.

Then we added another difficulty which we have all inherited -- the tradition of insulating ourselves from evaluation. By the time you and I came into the system, it was selling itself to the public for irrelevant reasons. Higher education had learned to avoid the responsibility for deciding what was and was not important; and it had learned to insulate itself from the public by closing its doors and refusing meaningful evaluation.

The period of the 1940's and 1950's was a great challenge and an exciting period. We had lots of students, by those standards we had lots of money, and we had lots of opportunity to do new things. What did we do? Well, if you cut through all the detail, I think you will decide we accomplished things along two broad lines -- one of them represented by the general education movement, the other by the proliferation of disciplines and graduate programs. The two things developed at the same time.

I was, as you might have guessed, up to my ears in the general education movement. I found it exciting. I found it sometimes crazy. There was once a man going around New York State trying to persuade us that the air age was such an overriding fact in our life that every student in college in New York State must be required to take a one-year course on the air age. That suggests one of the things that put us off in the wrong direction. Everybody was talking about coverage. Everybody was talking about how to get areas of knowledge and pieces of information into that crowded brain of the teenage student in a four-year period. The foresters have done a marvelous job. They have now invented a five-year program which they have jammed into a four-year context in order to try to get everything that a forester must know into a four-year period.

We did not yet know that we could not tell people everything they must know, so we tried desperately to arrange a vast range of coverage so that everything would be covered. Sometimes, however, it went to opposite extremes. I remember very well the dean who came to me and said that the medieval historian must be replaced -- in a department in which there were only European and American historians, and that he must be replaced even though there was no work on Latin America, Asia, or Africa in the entire curriculum.

I had the exciting experience of being involved in a marvelous curriculum in a college in New York invented by a terrible man. He was an authoritarian dictator who I fought vigorously as an AAUP chairman. He made us teach a marvelous curriculum. We were at that time the only college in the United States that required every student to have experiences in studying Africa, Asia and a "primitive" culture. The point of it all was to shake students up. We really found that exciting. It certainly shook us up because when we started teaching about Africa there were no textbooks, and nobody knew anything about Africa. We all had to scurry around to find out what it was we were going to teach. I think I learned something very fundamental from that.

I spent a year, about thirty years ago, studying general education programs and came back and made a one-sentence report to my president. He sent me back to write a thirty-five page report so the foundation that had funded me would think I had done something respectable. My one-sentence report was: the greatest programs in the United States are at the University of Chicago and Michigan State University. He said that was impossible, that they were entirely different. And of course they were, in structure. But what I had learned was that the structure was not very important. The fascinating thing about the general education programs in East Lansing and Chicago, in the 1950's, was that they were both operated by faculty who had designed and built them, were terribly enthusiastic about and committed to them, and the programs were exciting. The programs were exciting because the faculty were concerned with the behavior of students, with outcomes, with what happened to the students, and they were excited about the process. You know the Hutchins' program at the University of Chicago, in its famous days, was not really about the great books. It was about great minds. The whole thing was about faculty minds tangling with student minds regarding material which happened to be very challenging -- even though in some cases it happened to be very old.

But while all of this was happening, other things were happening in the American academic economy -- things which in the long run possessed the victory. There was a gradual but solid development in the colleges of the dominance of the disciplines. The disciplines began to become the controlling organization, to dominate the spirit of the universities. The basic disease which the liberal arts folks caught was imitation of the sciences, what we though the sciences were all about. We began to think in terms of linear constructs, building course upon course upon course. We began to think of criticism and analytical research as being the essence of our liberal arts work. We began to think of ourselves as historians, literary critics, philosophers first and educators second. We might mouth the cliches of the liberal arts, but if lecture courses were telling students and asking them to tell back, our talk about critical thinking might seem very hollow. I think in that period -- in which we became dedicated to the professionalism upon which our great research productivity in the United States has been based -- we lost the spirit of the liberal arts in our teaching. I do not think anybody took it away from us. I do not think we carelessly threw it away. I think we just lost it, as we directed ourselves to pursue more specialized and more parochial objectives.

Then we moved into the period of the sixties -- that very exciting period which Joe Smiddy talks about, when students wanted to do something about the world even if they went up a dry creek in the process. That was a terribly exciting period, but I think we came out of it pretty poorly. Why do I think that? I think we came out of it poorly because the students challenged us impolitely and crudely, but with perfectly appropriate challenges. They said, Tell us, man, what it's all about? What are you trying to do? What is your course supposed to do for us? They said, Why is it relevant? We sneered at relevance and said, Why is relevance relevant? -- and we got ourselves out of that one.

Their questions were important questions. Why is history good for me? What is it good for? I learned, in 15 years of teaching in a teacher's college, that if you asked a historian what he was doing, he would say, I teach history. If you asked an educator what he is doing, he would say, I teach people. If you asked either of them to what purpose, they both wanted to go home. The students were asking for what purpose -- a perfectly legitimate game. You know what we did. I was a dean of a college of arts and sciences, and I know what I allowed my faculty to do. They abolished all the requirements. Why did they abolish all the requirements? It was a lot easier than facing the challenge -- a lot easier than explaining why one must have foreign language, or why it was important to have certain mathematics courses, or why it was important to have western civilization.

There was another factor. We now had a proliferated curriculum which made it impossible to get everybody's interest in. So the new elective system, the new abdication of responsibility, the new period in which we finally said anything goes -- and we cannot as a faculty decide what is more important than anything else -- was a marvelous period in which we could then turn to the serious business of hunting in a competitive society for the FTE's that would account for departmental growth. In the process, incidentally, we did some funny things. Poor state universities created curriculums running from 128 to 136 hours for the standard price. Harvard University has never given away more than four courses a semester for the standard price. The quality is not bad. They make those courses good, but they were never caught up in the proliferation of courses and credit hours which seemed to be needed to support the vastly proliferated electives we created in the 1950's and 1960's.

I think we turned away from that challenge because we lost confidence ourselves in what we were doing. I do not really believe we knew what we were doing as people practicing the liberal arts, and in the process we turned it over to the students and then blamed them for their choices. I think it is a problem. I do not think it is a problem with structure. I do not think it is a problem of requirements. I do not think it is a problem of anything involving organization or dollars. Those problems can be solved. I think it is a problem of the spirit, and I think it is our problem.

I have three suggestions. One is that we had better believe in and act on what we say about the humanities. Why do we teach them? Why are we committed to them? How is it that they really do those marvelous things for the mind of the student we say they do? We had better be up front and honest about what we are doing. Second, we had better address our considerable skills to doing our thing well and to helping society understand why it is important. Somewhere in the United States there are some students who have deserted the humanities because the teaching is dull. Somewhere in the United States there are some students who have deserted the humanities because the teaching really is irrelevant. I once spent two years of my life doing an honors program, including an honors paper on the reading of William Wordsworth. At one time I knew more about the reading of William Wordsworth than anybody else in the United States. There is a 700 page volume in the honors college at Wesleyan University which tells it all. I do not think anyone has ever read it, because both the professor and I were dull. We misunderstood the challenge and produced a catalog. It is a marvelous catalog. It may even be accurate.

I have been less disturbed (if I may make this comment) at the talk about marketing, as if it were an evil thing. I have tried to listen to the talk about marketing in this meeting. I think most of the talk about marketing has been negative, negative marketing. We have been talking about marketing as if marketing a course was simply finding out what the ignorant and uneducated people want and giving it to them. We have a marketing problem, and we had better take it on. Our marketing problem is to help people, who have not had the advantages we have, understand why it is that what we are doing is so important for them. There is nothing wrong with that kind of marketing. We had better be into positive marketing.

Finally, I would like to say that we had better be models for our students. We had better be what we want our students to be. I think you and I have learned more from observing professors than we have from listening to them. It is not really a structural problem, ladies and gentlemen. It is a problem of beliefs. Students really do like to rise to expectations, whether they are in the great tradition of the selective environment of the University of Virginia or the brawling kind of open situations that a lot of the rest of us work in. They really do want to do what is expected of them. You and I are in charge of the expectations. That's all I have to say.

Discussion With President's Panel

Dr. Stephen Wright, Moderator

Dr. Wright: Although I spent 13 years as a college president myself, I wouldn't have missed this for anything in the world. We are going to take a few minutes and during that few minutes you may take issue with what has been said, if you feel so disposed, or you may pose a question or simply make a statement of your own position. Anybody like the floor?

Questioner: There was a point made, and I think it was an interesting one -- I've forgotten now which president made it -- that the students who get a good liberal arts education become the best draw for more students to take liberal arts education. It struck me that one of the things that is lost in liberal arts education, in the humanities in particular, is the type of rap session that makes for education -- when students have a common knowledge of certain things and then go to the cafeteria and talk about it, where all of it comes to a head. I have no idea how we can bring that back. Rather than talking about what they are going to do with a job, go to the cafeteria and talk about if Plato or Aristotle is right. That seems to me to be something that is lost from humanistic education because perhaps we don't give it to our students. We don't give them the type of challenge that we should. I have no idea how it can be produced; but if we can produce it, then we would have to beat them off from the courses because it becomes the kind of thing they want.

Dr. Hereford: I made the comment about the influence of one generation of students on the succeeding generation. One thing does occur to me. We have a diversity of institutions in this state, not only in terms of their mission and their role, but as regards the setting in which they exist. I am thinking of an urban setting where most of the students, after finishing their classes or laboratories, go home rather than spend their evening necessarily with other students. This is distinct from an institution which is almost wholly residential, as mine is, where students inevitably are going to spend the rest of the day, the evening, talking with other students. It may be over a beer or two, but they will be doing it. I think that the influence a generation of students has in that setting is much more likely to become crystallized during the four years, or however many years, they are there. Then as a new group comes in, during their third or fourth year, they come under that influence. That is one of the factors I think of as advantageous in a residential institution. But as I said, I do not really understand how they bring it off.

It is not only at my own institution (with regard to a concern or interest in the liberal arts), and I hesitate to say this because I don't want to be boastful, but we have an enormous number, a very high fraction of our students who get degrees. I am often asked why it is that our student athletes get degrees at a higher rate than the rest of the undergraduate student body. Ralph Sampson got all of this publicity, but he was simply typical. I am confident in that case it is because of the influence of the peers. You come there, you come to get an education. When your peers go on and carry it out, you carry it out also. I think the same thing is true in influencing students with regard to the programs of study they undertake.

Dr. Rollins: I would like to comment on that. I agree with everything that Frank has said, but I want to add something else. I think one of the things that professors can do, to create that sort of atmosphere, is to be provocative. Ladies and gentlemen, our campuses these days are very quiet. Those of you in politics may find this reassuring. I do not. A really quiet university is dead. The universities are very quiet these days. People are not being very provocative. We are well-adjusted and quiet, organization-oriented, doing our own thing, not causing any trouble. I want to define trouble. I do not mean trouble for trouble's sake. I mean trouble for thought's sake. If students are in classrooms where professors are playing it safe, students are not going to be very excited about that. I wrote an article on tenure a long time ago, when I was an AAUP president. I said I thought we would ruin it by not taking advantage of it. I said I thought that most of the American professors did not need tenure because they never challenged it. We need to be more excited. Maybe the ladies and gentlemen of the House Education Committee might be excited about us, but I think in the process we might do more good.

Questioner: I will continue with Mr. Rollins remark. It seems to me that in many ways, between the professionalism of the graduate schools and the tenure systems, we pretty much exclude anybody who is going to present any challenges by the time they get through. We become a self-selective group.

Dr. Rollins: You know that is a terrible statement if that is true. We are running the institutions which are supposed to help people learn how to think, and you are saying that our selection processes screen out anybody who really does any thinking.

Questioner: Dr. Rollins, to follow that up, I have two comments. Parents of the children who are now coming to school are the same people who went through the sixties. To a certain extent the question is with the concern that was expressed with the social rebellion. What was accomplished? It seems to be a return to a conservative time. The other issue has to do basically with the question of the students themselves. Who are involved in the liberal arts? The culture that we live in seems to be providing -- erroneously or not, we make that judgment -- a kind of values blurb. The student is coming for the stuff of the training, the professional life, and seems to be getting the value issues from other forms in our culture. It is seriously impacting upon university education. That has to be contended with if we discuss the liberal arts in our culture.

Dr. Wright: I think you will agree with me that our colleagues here have provided us with a stimulating and educational evening.

Introduction of Dr. Evelyn Fox Keller

Gordon K. Davies
Director, Council of Higher Education

Dr. Evelyn Fox Keller comes to us this morning from Cambridge, where she is Professor of Mathematics and Humanities at Northeastern University and a Visiting Scholar in the program on Science, Technology and Society at the Massachusetts Institute of Technology. Dr. Keller's education includes a bachelor's degree from Brandeis, a master's from Radcliffe and a Ph.D. from Harvard, in the Department of Physics, with a dissertation written in molecular biology. The journey through her doctoral years is described most poignantly in a book entitled Working It Out, the reflections of a number of prominent women scholars and artists about their formal and informal educational experiences.

Dr. Keller is trained and has done considerable scholarly work in mathematical biology, molecular biology and theoretical physics. Among her awards and professional honors are the Mina Shaunessy Award in 1981-82, memberships in Phi Betta Kappa and Sigma Xi and a National Science Foundation Fellowship. She also graduated magna cum laude from Brandeis.

Perhaps the book for which Dr. Keller is best known is a biography of the Nobel Prize winning scientist, Barbara McClintock. The biography is entitled The Feeling for the Organism. In addition, she has written widely various articles and spoken on scientific method and on gender, the role of women in science. Next month, the Yale University Press will publish her book, Reflections on Gender and Science.

In her biography of cytogeneticist Barbara McClintock, Evelyn Fox Keller writes of McClintock's insistence upon letting the material speak to you. The material for McClintock is the corn plant, and Dr. Keller describes how McClintock proceeds to let the plant tell her what to do as a researcher. By that she means getting to know each plant, understanding each plant from the inside, having what McClintock calls a feeling for the organism. Dr. Keller's study of McClintock is obviously far more than a biography. It is a critique of a scientific mythology, an implicit argument against subject-object dualism and against the assumption that scientific inquiry is impersonal, rational and objective, which are, of course, all the things in our society that women are not supposed to be. She therefore brings a fresh and exciting perspective to the relationship between Francis Bacon's two tribes, and to the subjects which we have been considering yesterday and will continue to consider today. I ask you to welcome her to our meeting.

Dr. Evelyn Fox Keller

Professor of Mathematics and Humanities
Northeastern University

Thank you very much, Gordon, for that wonderful introduction. It is a great pleasure to be in Richmond, my first time here, and it is an honor to address you. I am speaking, of course, on a familiar subject. It is a subject that you have all been talking about for the last two days, but that educators everywhere have been talking about for a long time now. The notion that we are facing an educational crisis in America has, in fact, become a cliche. Everyone knows that our educational system is in trouble; but not everyone agrees as to why this is, or what we should do about it. In fact, the different ideas people have about the nature of this trouble reflect even deeper differences in our understanding of what education means.

In the report of the National Commission on Excellence in Education issued last year, called A Nation at Risk, we were warned of the dangers we face should we fail to solve our educational problems. "We live among determined, well-educated, and strongly motivated competitors," we are told, "who will outstrip us in the future if we cannot keep and improve on the slim competitive edge we still retain in the world market." The present state of our education suggests that we have in effect been committing what the report calls "an act of unthinking unilateral educational disarmament."

That is very strong language, and a very particular kind of language -- a language which makes very clear a particular notion of education and a particular set of purposes that education must serve. We are in fact explicitly told that education "is the indispensable investment required for success in the information age we are entering." As seen here, education is the prerequisite for survival in an age of competition and threat. It should come as no surprise, therefore, given this highly instrumental view of education, that the remedy proposed is the improvement of our technical and scientific curriculum.

Quite a different understanding of what education is underlies the report recently issued by the National Endowment for the Humanities. In the document called To Reclaim a Legacy, a document that has claimed so much media attention in the last few weeks, we are told that the American colleges and universities are failing to give students "an adequate education in the culture and civilization of which they are members." Education here refers explicitly to the humanities. The crux of our educational crisis is to be found in the fact that, "Most of our college graduates remain shortchanged in the humanities -- in history, literature, philosophy, and the ideals and practices of the past that have shaped the society they enter." As educators, we are failing to transmit "the best that has been thought and known." We are allowing "the great expressive spirits and great expressive epics of human experience" to pass from consciousness. Not surprisingly, the remedies called for in this document are rather different from those recommended in last year's statement.

This double vision and double understanding of what education is, is something we all carry around with us, and it is now new. Long ago C.P. Snow coined the term "two cultures" to describe the schism that we have learned to live with -- the division of the very concept of culture into two incommensurable parts, science and the humanities. In fact, this division represents a schism not only in our universities. It reflects a much deeper and much older division that we have inherited from modern culture and internalized to the very core of our being -- that is the division between fact and values. Facts are what science and technology give us. In contemporary times we might say facts are about the real world while values are the province of the humanities. Where facts are quantitative, values have something to do, we are told, with the quality of life, celebrated, reproduced and preserved by the humanities -- much as women traditionally celebrate, reproduce and preserve the virtues of the private sphere in a world that is increasingly given over to the public sphere. Science, facts, quantity are about the real and objective, while humanities, values, and quality are the domain of the subjective, by clear implication not real.

If the division between these two spheres seems to us today so lopsided, it was not always so. In an earlier time, science and technology were seen as interlopers to culture in general and to education in particular. The arguments earlier brought to bear on the relative merits of a technical or instrumental education and a humanistic education were accordingly very different. No doubt the changes over time and the arguments mustered on one side or the other reflect, in large part, the dramatic shifts that have occurred in contemporary times in the balance of power between the worlds of science and the humanities, the world of facts and the world of values. And as so often happens when worlds are divided into two, what started out as two cultures has gradually evolved in the direction of increasing uniformity. Mr Bennett is absolutely right: the humanities have somehow gotten lost.

Without question, the extraordinary successes of science and technology that we have witnessed, over the course of this century especially, have played a major role in this shift. Recent scholarship -- of a kind that does not fit neatly into either traditional schema -- has taught us a great deal about factors, other than pure success, that have been significant in the dramatic rise that has occurred in the culture of science and the corresponding decline in the culture of the humanities.

In the early part of this century, the debate between a humanistic and a scientific or technical education reflected, in part, a contest between an old world and a new -- between high culture and middle culture, between an upper class declining in power and a middle class growing in power. Science and technology were then, and have been throughout this century, the educational instrument of a society moving toward classlessness, particularly insofar as they could be seen as the educational arm not only of progress, but of democracy itself. By contrast a humanistic education was seen as the protection of an older order, a protection against plebeian values, against the philistinism of the masses.

Today, given the enormous social, political, and technological changes that have occurred, this debate takes on a very different cast. While we have not quite become a classless society, the class divisions of an older era no longer apply. Indeed, with our entrance into the technological age, a new kind of social order has come into being. With this new social order, it can no longer be argued that instrumental education serves the interests of democracy while the humanities protect the influence of an aristocracy. If anything, today the tables are turned. We have a new vision of aristocracy and a corresponding new threat to democracy. That threat is in the rising power of a technological elite.

Consider, for example, the dilemma posed by nuclear power. Even the most enthusiastic proponents of nuclear power as a technological solution to our energy problems admit that with that technological fix comes the need for a political reorganization that should frighten us all. Alvin Weinberg, for many years director of the Atomic Energy Commission, describes the dilemma as follows:

> We nuclear people have made a Faustian bargain with society. On the one hand, we offer.... an inexhaustible source of energy....But the price that we demand of society for this magical energy is both a vigilance and a longevity of our social institutions that we are quite unaccustomed to....In a sense, what started out as a technological fix for the energy-environment impasse -- clean inexhaustible and fairly cheap nuclear power -- involves social fixes as well: the creation of a permanent cadre or priesthood of responsible technologists who will guard the reactors and the wastes so as to assure their continued safety over millennia.

This is just one example. Our dependency on a priesthood of responsible technologists is not simply a consequence of the problems incurred by nuclear energy. In a thoughtful analysis of the political dangers incurred by nuclitechnological growth in general, William Ophuls reminds us, "it is not nuclear technology alone that offers a pact with the devil who will in the end claim our political souls."

In every arena,

> More technology means greater complexity and greater need for knowledge and technical expertise. The average citizen

> will not be able to make a constructive contribution to decision making, so that "experts" and "authorities" will perforce rule. Moreover, since accidents cannot be permitted, much less individual behavior that deviates from technological imperatives, the grip of planning and social control will of necessity become more and more complete.

We must ask ourselves, therefore,

> if continued technological growth will not merely serve to replace the so-called tyranny of nature with a potentially even more odious tyranny of men. Why indeed, should we deliver ourselves over to a priesthood of responsible technologists who are merely technical experts, and mainly lack the excellence of character and deep philosophical understanding that Plato insists his guardians must possess in order to justify their rule?

In other words, can we trust our new priests to rule us wisely; and, if not, who will guard the new guardians.

These are, I think, the most critical challenges facing our society today, and especially facing us as educators. How can we design an educational system that will impart wisdom to technologists and, simultaneously, sufficient technical expertise to others so that we can guard our new guardians? As I see it, the problems we face as educators are even more serious than has been suggested in the documents I refer to. Like Mr. Bennett, I too worry about the loss of our great cultural past. But I worry even more about the possible loss of a viable future. I think we are a nation under threat, but I do not think the threat comes from without -- not from competitive markets, nor from competing cultures. It comes from within. The fact is, it is not only old values that are in danger of vanishing, but the very value of values. Wisdom has become equated with expertise, moral arguments with efficiency considerations, and value itself determined by cost-benefit calculations. We have lost not only the wherewithal, but any place to stand from which we could imagine guarding the new guardians.

In this present state of affairs, what can we hope for from the humanities as they are traditionally defined? The truths and values of Plato, Aristotle, Shakespeare cannot halt the momentum of genetic recombination, of multi-national corporations, or of the nuclear arms race. They cannot even inform the process in which we are engaged if noone is listening. Mr. Bennett's recommendations of a core curriculum transmitting the best that has been thought and known can be seen as a heroic effort to restore a balance belonging to an earlier era -- an era in which values still had value -- but it is an effort that cannot work by fiat.

I believe with Mr. Bennett that students should read the great books, but I also believe an education, humanistic or otherwise, cannot be force fed. Unless the relevance of the great books of our cultural past to the lives young people face and to the experience they bring can be demonstrated, their value will be lost just as surely as if they were not being taught. If education is to provide a moral and imaginative framework for action, as Mr. Bennett suggests, it must serve people where they live. In order for this to happen, our humanities curriculum must not only be restored and revived, it must be redefined. The question is how is this to be done.

My recipe for the revitalization of the humanities starts at the beginning. It starts with the healing of the rift in our culture that divides the humanities from science, or for that matter the practical concerns of life. This is because I believe, as I hinted at before, that it is precisely the divorce of the humanities from the real business of life that is responsible for its loss of value (and corresponding loss of power) in the first place. Indeed, the first step in the loss of power of our humanistic traditions was in the acquiescence that the humanities has nothing to tell us about science, about technology, about what it means for something to work, about the struggles and decisions ordinary people face as they go about the business of their daily lives.

I see the solution for the liberal arts, therefore, in the reintroduction of the humanities into the world of both science and everyday practical life. For this to happen, it is not sufficient to teach humanists a little bit of science, and scientists a little bit of humanities. Rather, the spirit that gives the humanities its strength -- its capacity for interpretation and reflection -- must be brought into every aspect of our educational system. It must infuse the very disciplines that have the least experience with reflection and interpretation. Conversely the spirit that gives science its strengths, its capacity for analysis and logical inference must also be brought into every aspect of our educational system. Two cultures must not simply be revived in juxtaposition; they need to be reconceived in such a way as there are no longer two cultures, but one.

I think the best clue as to how to accomplish this comes to us precisely from the new developments in scholarship, and from those experiments in education of the last two decades that the NEH report implicitly, if not explicitly, blames for our present impasse. Obviously I do not agree, and I would like to spend the remainder of my time stating just what I think can be learned from those developments that is of use to us here. I will group these lessons into two categories, both in different ways stemming from the same demand for that no longer so respectable word -- relevance.

Let me begin with what I know best: namely the interpenetration of the humanities and the natural sciences that has begun in the last twenty years, and the chipping away that has occurred in what we have now come to understand as the myth of the autonomy of science. When I was a student, I was trained in an educational tradition that thoroughly accepted the two culture split -- and a crucial part of that split was the belief in the absolute autonomy of science. Two disciplines -- with nothing in between, no middle ground which might inform us, for example, of how this belief in the autonomy of science had come about, the extent to which it was supported by reality, and the extent to which it was not a realistic description, what uses and whose interests such a belief served.

In particular, we had no means of reading the texts of science with any perspective other than the scientist's own. The consequence was that scientific authority reigned supreme -- unaccountable to any judgements other than its own. For the vast majority of people today, this situation remains, essentially. In most of our educational institutions, the skills and expertise required to see through the barrier and to work through the barrier separating the two cultures have not yet been developed, and therefore acceptance of the autonomy of science continues essentially unabated.

But a few people have learned to ask some very important questions, and have found some very interesting answers. For example, the autonomy of science turns out under close scrutiny to be not axiomatic -- rather it is a very particular position in society that scientists have worked very hard to establish. Originally, in the 17th century, in the days of the founding of the Royal Society, the autonomy of science was deemed a necessary promise. It was necessary to promise the state, the king in particular, that scientists would not try to influence public policy, or have any involvement in politics altogether. The reason for this had earlier to do with the fact that during the preceding twenty years, the visions of science had become contaminated by association with the radicals in the English Civil War. Autonomy was not an intrinsic property of the Royal Society -- it was a promise of good behavior made to buy the support of the state.

Throughout the history of science, the autonomy of science has been invoked whenever it was functional to the growing institution of science to do so. In modern times, scientists have come to regard their autonomy as absolutely necessary to their existence, a god-given right. Consider the problem of funding procedures, the difficulties inherent in our accepted system of peer review. This has been repeatedly criticized for promoting insularity and for stifling creativity, but the arguments of the critics have been ineffective against scientists' claims of the necessity of their autonomy.

The social studies of science is a discipline that makes use of humanistic inquiry to establish a middle ground between the cultures of the humanities and science. By placing science and technology in its social and political context, it provides us with ways to respond to the scientists' claims (and implicit threats). We have learned, through our skills as readers and interpreters, that scientists too are readers and interpreters, with interpretive practices that are not absolute, but in fact socially derived. With this understanding we are no longer obliged to accept scientists' claims about themselves and their practices at face value, but we can look at these claims from without. Indeed, the social studies of science provides us with a model for the re-introduction of the arts of reflection and interpretation into the science of facts. As such, it restores to scholars, thinkers and educators a kind of power we had lost -- it shows us that we are not helpless.

In turn, the social studies of science also provides a model for informing the scientists themselves -- for enlarging their perspective. By way of illustration I would like to tell you a little bit about the McClintock story, and my own experience in writing that story.

For those of you who don't know the basic outline, I wrote the story because of its drama. Barbara McClintock discovered transposition, for which she has now been awarded the Nobel Prize, in the late forties. I started to speak to her in the late seventies, and the story of her heroic efforts to communicate these findings to the larger scientific community, and the dismal failure of those efforts, was both poignant, and I thought, very instructive. I wrote that book before she got the Nobel Prize, in order to help establish her work and her own contributions -- the importance of these in the history of science. Now what was happening at that time, when I first got into the picture, is that mainstream science was claiming that McClintock was at a transitional point because the phenomenon of transposition was just then being rediscovered in molecular biology. But there was a great deal of doubt as to how extensive the phenomena was, whether it had the implications that McClintock claimed.

Universally, I was told that she had no data to support her claims. I went back and looked at the story and saw that the claim that she had no data was a very particular claim made from a very parochial stance. She did not have the kind of data that molecular biologists had come to claim as their own, had come to demand as their own reference point. She had a different kind of data that was from another reference point equally compelling, but disparity had developed between two worlds of biology across which there was no communication possible. This problem, this issue of communication in science, led me to think about the nature of language, a humanistic concern in science itself.

Let me read you a little bit from that book:

> Scientists and philosophers of science tend to speak as if "scientific language" were intrinsically precise, as if those who use it must understand one another's meaning, even if they disagree. But, in fact, scientific language is not as different from ordinary language as is commonly believed; it, too, is subject to imprecision and ambiguity and hence to

> imperfect understanding. Moreover, new theories (or arguments) are rarely, if ever, constructed by way of clear-cut steps of induction, deduction and verification (or falsification). Neither are they defended, rejected, or accepted in so straightforward a manner. In practice, scientists combine the rules of scientific methodology with a generous admixture of intuition, esthetics and philosophical commitment. The importance of what are sometimes called the extra-rational components of thought in the discovery of a new principle or law is generally acknowledged....But the role of these extra-logical components in persuasion and acceptance (in making an argument convincing) is less frequently discussed partly because they are less visible. The ways in which the credibility or effectiveness of an argument depends on a realm of common experiences, on extensive practice in communicating those experiences in a common language, are hard to see precisely because such commonalities are taken for granted. Only when we step out of such a "consensual domain" -- when we can stand out on the periphery of a community with a common language -- do we begin to become aware of the unarticulated premises, mutual understandings, and assumed practices of the group. Even in those subjects that lend themselves most readily to quantification, discourse depends heavily on conventions and interpretation -- conventions that are acquired over years of practice and participation in a community. Thus even an argument in theoretical physics -- that most extensively mathematized of all sciences -- depends on communally shared conceptions of the meanings of the terms in an equation and on the relation of the equations to the processes they represent. When such a common "language" is absent, arguments cease to be effective even if the equations are impeccable.

What I was trying was to open up a little bit of space. I was trying to show that the judgments of the scientific community are not absolute but parochial, and the limitations of those judgments, the barriers of their discourse. are invisible to them. In showing this I was trying to establish the legitimacy of alternative points of view. As Gordon has told you, McClintock had a radically different vision of science than that which has come to prevail. I wanted to explain, to try to show, how that too could be legitimate, could have value in a world that had become so monolithic.

I like to think that I succeeded. I like to think even that the book, and the articles that I wrote before, helped a little bit in establishing McClintock's growing legitimacy and even perhaps the Nobel Prize. Certainly, however, I do know that I helped to create a space. I helped to open up the perspective within the scientific community for a large number of individual scientists who felt, as a result of the book, their own different perspectives legitimated in a world which had denied them any legitimacy. I am not only talking about women scientists, though certainly they were most directly affected, and I am not only talking about biologists. The chairman of my mathematics department came to me to thank me for the book because, he said, it gave him the courage to pursue a line of inquiry in mathematics that he had not had the confidence to do for years. So that's terrific, that's an example of what I mean by informing, instructing, enlarging the perspective of the scientific community itself.

Everything I have said about science applies also to technology. If science is not a self-defining endeavor, the same is true of technology. If technology is to remain our tool, instead of the machine that masters us, we must learn to read and interpret the forces that shape it. Today, this issue takes on a special urgency as the computer threatens to transform. Computers, like machines in general, are stupid. It is our passivity that leads us to concede to them an intelligence. The price of that concession, is our freedom -- and remember, it is not a concession to the machines themselves, but to the experts who do shape and master the machines. This we cannot afford to do. We must employ an liberal arts education to take charge -- again, any concession to division is a concession to impotence.

The truth is that none of our activities is as blind or as inexorable as we pretend it is. Our sciences, our technology, our basic business practices, all express and convey silent, unarticulated values and choices. The function of our education should be to enable us to see what we are about -- to read, interpret, and reflect about our basic activities, whatever they are -- in order that we can begin to make our choices conscious, in order to make the conscious judgements that will meet our needs as human beings.

Paolo Freire has said: "There is no neutral education. Education is either for domestication or for freedom." I suggest that such an education that seeks to reunifies our culture, that gives us the tools to become the agents rather than the victims of our own futures, is an education in the cause of freedom rather than domestication.

But, you will say, learning to read and interpret the text of science, technology and everyday business practices is no substitute for reading the great classics like, for example, Plato. But, if we are really serious about understanding the social, cultural and political context of science, our efforts will inevitably take us back to Plato. In the process, however, we will have to read Plato, too, as a text with a context -- a context that reminds us of who Plato was writing for and who he was writing to. This takes me to the second point which I promised to touch on.

My notion of how to revitalize the humanities is to take it down from its ivory tower where, at least today, it is educationally ineffective. So far, I have concentrated on taking it down from the tower into the practical world in which we live. We need also to take it out of the ivory. Just as humanistic traditions are restored to potency when employed in healing the rifts between science and humanities, so too, they gain in potency when employed in healing the other rifts in our society.

Almost all, if not all, of our great books -- our high culture of the past -- speak for and to a very small proportion of the human race. In particular, they speak for and to a male, ivory elite of the western world. As long as students belonged to the same ivory elite, there was no problem. Today, however, we claim to have enfranchised all peoples -- even women and blacks -- people who, because of their enfranchisement are now claiming an entrance into culture. The restriction of our humanities curriculum to an older canon -- a male, ivory canon -- is to deny the reality of that enfranchisement we have promised.

Neither the humanities nor culture is something that WAS and needs to be preserved. Rather culture IS, and it needs to grow. Part of its growth depends on learning to read and interpret our old texts with new eyes, and part of it means we need to include new texts. Again, the experiments of the 1960's prove to us, that experience bequeathed to us, a number of new paths. It taught us to pay attention to social history and and black literature. More recently, we have learned to add to the familiar curriculum of war studies, a new curriculum of peace studies.

Literature today is no longer just the literature of a male, ivory, eurocentric tradition. History is no longer the story of great men and wars. It is becoming the story of ordinary people, and even of peace. Philosophy is no longer merely the clarification and analysis of one form of thought -- it is becoming a tool for exploring other kinds of thought as well -- even perhaps "maternal thinking." A humanities curriculum that takes these lessons to heart will, in my view, provides us with an education that can truly be an education for freedom rather than domestication.

Discussion of Dr. Keller's Presentation

Questioner:	What do we do to change the reward system in our society?
Dr. Keller:	I have tried to appeal to the National Science Foundation to influence its funding procedures, its procedures of operation. I have written critiques of the National Science Foundation and recommendations for revisions. We chip away wherever we can. It's a problem.
Questioner:	We who build curricula and requirements for graduation for our students have a program that is about 124-130 credit hours long. What do we do about the dilemma of your scientist colleagues who require more and more courses about less and less, leaving very little room for the humanities and the arts? How do we cope with that problem?
Dr. Keller:	I think it can only be addressed on a state level or higher. For individual colleges to try to override the pressures of professionalization alone is almost suicidal. I was for almost ten years involved in developing a liberal arts curriculum at a small state university in New York, at Purchase. It was an experimental college, and we struggled with this problem daily. The dilemma that we faced is that if we had requirements, as we did, and we kept a lid on the demands of the scientists for more and more courses about less and less, it cost the students in their entrance into graduate school That was the dilemma. That is why it has to be a more concerted effort. We cannot do it alone. I think when there is a national consciousness of the fact that we are teaching more and more about less and less, then we might be able to reach a consensus about turning back this problem. Let me tell you this story that is related to this very same kind of problem. When Barbara McClintock came to talk at Harvard in 1979, she met with a group of graduate students who said to her: "We can't do what you recommend. We don't have the time. There is always the next sequencing to do. We have to do what the technology demands of us." Well, they don't have to. The reward structure is putting a lot of pressure on them to do that, but they don't have to. It is possible to resist that pressure, and that was, in effect, McClintock's response. She reminded them that, when she was doing her own work, she chose to work on corn rather than drysophila,

even though with corn you can only grow two crops a year, whereas a generation of drysophila turns over every ten days. Finally, she said, she found even two crops a year was too much for her to digest and think about, and she returned to one crop a year. These choices are our choices even though the pressures are enormous.

Questioner: First of all, I want to thank you for a marvelous talk. I want to preface by saying that, because I got so much out of it. Just at the very end, you presented a possible solution to the problem by introducing more variety into the culture. I think we do need to do that, but I want to present an hypothesis and see what you think of it. Suppose Barbara McClintock had done her work in Britain in the 19th century, when all the scientists in Britain would have had a really first-rate humanistic education. They would have been able to communicate with each other, not in their own special language, but in a language of rhetoric. I am thinking of the debate between the philosophers and the rhetoricians that Cicero described. Socrates says that we only get the truth by dialectic, by specialized knowledge. Cicero says that you have to know all those things, but you then have to communicate it to other people. I think Cicero was right, and stood for the position of humanistic education and what it can do. So I am proposing that, instead of the solution to the problem you picture,the proliferation of new experiences and new cultures, a very powerful shared culture also enables plurality and the ability to communicate.

Dr. Keller: I almost agree with you, except I would substitute for the word "enables" the work "enabled." That is to say, I think it worked in a world in which education was for a very small portion of society, a very select group of people. As I said, great books were written, and this culture came from a very special core -- a part of society. As long as education was for the same part of society, which describes 19th century England, it worked. It established a common language. It didn't establish pluralism. It established a common language for a very limited culture, for a very limited world. That is not the world we live in anymore. One of the reasons that does not work for American science in the 1960's through 1980's is that American scientists do not come from that world or culture. It is alien to them if you make them take courses in Plato, Aristotle and Shakespeare. It will remain alien to them. That is not their cultural tradition.

It was the cultural tradition of the men who were scientists in England in the 19th century.

Questioner: For you it was a new cultural position, but a shared one.

Dr. Keller: That's right, a shared one. Now I'm not an advocate of separate cultures. I am not an advocate of separate curriculas or separate cultural groups. I am an advocate of pluralism in all our culture. I talk about unifying our culture, not dividing it. This unified culture that I envision is one that respects pluralism, expects differences.

Questioner: I have a naive belief that maybe the great books survive because perhaps they were addressed to audiences over a continuum of time. When you suggested Shakespeare, I certainly believe that Shakespeare didn't like selected audiences. I think he wrote for the average person in his time. What you said is probably true of Plato and Aristotle, but some of the great books we have may have been written for a larger audience.

Dr. Keller: It is quite true that during their time they were often written for larger audiences, and Shakespeare is a notable example of that. However, beyond that time, they came to represent culture for a very limited part of the whole culture.

Questioner: Thomas Huxley is an example of a scientist who came out of that 19th century classical education. In 1870, he ran for the London School Board. He advocated the introduction of laboratory science into the curriculum because, he argued, the study of the classics didn't teach anybody anything of value or how to think critically. When he made the opening address at John Hopkins University, in 1876, he advocated that physicians be trained without any intervention by or place for the liberal arts in that training -- because what they needed to know was how to best help their patients, not how to broaden their lives. It strikes me as a kind of irony -- talking about the liberal arts trying to save the sciences -- when your opening remarks talked about the sense of autonomy in the sciences, and how the introduction to the sociology of science is a way of bringing scientists back out of that closed box. In fact, most of the liberal arts disciplines in this century have tried desperately to imitate the sciences in getting to autonomous boxes. In literature, my own discipline, we prided ourselves for many, many years on creating subject-object dichotomies, on being objective. Only now, with a sort of Copernican revolution in criticism in the last few years, are we trying to get away from some of that. That's being fought, that change. So it's not only a question of introducing new content, for example black studies or women's studies. It is also methodology, the basic assumptions that we are talking about.

Dr. Keller: That's right.

Questioner: One of the greatest contributions, I think, in the rise of black poetry and women's poetry in the sixties, was the challenge to the methodology, the standards, the esthetic, not necessarily the content itself.

Dr. Keller: That's right, and that's what I was talking about. I really appreciate your remarks because of the ways in which the humanities have acquiesced in this division. They have attempted to respond to or retrieve their power by mimicry, but it clearly doesn't work. It reminds me of an aspect of the women's movement that I also think ultimately can't work -- the demand to be treated just like men. That's not to say I am not an advocate of women's culture. I think that we all have to rethink these division that divide us into two separate creatures. Once that divisions is in place, it is no solution to try to mimic the other side. That simply doesn't work.

Questioner: What kind of proposal do you have for bringing our curriculum out of the ivory tower, down into the trenches, meeting the students where they are in our society. I've been involved in two different institutions that have tried to do that, yet those attempts have been abandoned because there doesn't seem to be a place in academe for that. Each of the institutions had course requirements at the upper division level, broadening courses that were maybe more contemporary-oriented. But they didn't fit into the distribution requirement mode of thinking. The basics of literature and philosophy and the humanities, several of the courses that I have taught myself -- like Energy in Public Policy, Science and Technology in Society -- just do not fit into what most curricula regard as the set of distributions, the generally recognized divisions. These courses are where the values of modern society and our own thoughts can be discussed and can be related, yet it is really hard for any single institution to move in that direction. Do you have any suggestions?

Dr. Keller: I realize that I am suggesting that we paddle upstream, that the direction that we have been taking in the last eight years, especially, has been in the opposite direction. Certainly Mr. Bennett's program is in an opposite direction. Part of the reason I gave the talk that I did was an attempt to show that it's really very dangerous, the direction that we are going. It desperately needs to be resisted in every way we can. It is hard. One of the areas that has not suffered yet (and I hope won't) this change in direction (and it might serve us as a kind of inspiration), is the area of feminist studies -- which has been growing not only as separate departments, but in its power to infuse the disciplines with this new sense of purpose. This influence has been very dramatic, and nowhere more dramatic than in literature. It really has revitalized the study of literature (this critical theory) in an extraordinary way, and provides legitimacy. Feminist studies brings a sort of interdisciplinary perspective that is definitely on the wane in our universities, and it can be pointed to as an example of a way that clearly has been productive.

Questioner: I think personally that people in science have a moral obligation to explain to the rest of us what they are doing, how they are using our money. What do you think would happen if we required of any science major that they would have to be able to write about what they are doing, what their research is, and what their courses do so that the average people can understand.

Dr. Keller: I would love it.

Questioner: How do you go about doing that?

Dr. Keller: I think that is actually a very good suggestion which can be instituted into science curricula without very much protest. Scientists would not dig in their heels in the same way they do when you say a course on the ethics of biological research should be required. They can accept that need. The fact is that students graduate with enormous technical accomplishment. I remember one student I had at Purchase, a math major, who was very gifted. She had an interview for a Danforth fellowship and was asked to explain what her work was about. She couldn't do it. It was appalling. So I think that is a requirement we might succeed in getting incorporated into every science curriculum.

Questioner: I would just like to make a comment on a previous questioner's comment. I think there is absolutely no chance whatsoever that Barbara McClintock would have been understood in the 19th century. Her phenomenon would have been interpreted as a Lamarckian model in those times. The real problem with her work was that she was so far ahead of her time that it was difficult to provide the context in which one could place her observations within a framework.

Dr. Keller: What remains to be seen is whether they will.

Questioner: The other thing I would like to ask you is this. You made an indictment of the peer review system. We all recognize its problems and limitations, but I would like to ask you what you would propose to put in its place?

Dr. Keller: That's what the director of the National Science Foundation asked me. I'll tell you what I told him. I cited a story, a story told to me by Lynn Margowitz - who is now a member of the National Academy of Sciences, so she is quite reputable. She has devoted her biological career to the study of symbiosis in cell evolution. When she published her first book, the NSF terminated her funding and has never funded her since. It was explained to her. The program officer said ,"The molecular biologists think your work is shit. It only appeals to the small minds of biology." This is what she was told. This is a quote. When she asked who the small minds were, she was told, the naturalists. So my recommendation to the director of the National Science Foundation, who unfortunately is leaving, but who did relay that recommendation -- was to find out who the big boys call the small minds and fund them.

Dr. Davies: Dr.Keller's reminder that the way to a unified culture is not backward but forward clearly indicates that she is not one of those small minds, and we are very grateful to you.

Introduction to Governor Charles S. Robb

Dr. Steven J. Wright

Ladies and gentlemen, I would like first, if I may, to tell you who the very distinguished people are who are seated on the platform: Dr. Gordon K. Davies, whose genius it was that gave rise to this conference; Mrs. Dorothy McDiarmid, who is Chairman of our House Education Committee, and I am told a very superior one -- we are delighted to have her as our platform guest; Dr. Evelyn Fox Keller, who spoke so brilliantly this morning, and who has been an ineffably charming guest at this head table -- we are glad to have her here; and Mr. Horace Fralin, who is Vice Chairman of the Virginia State Council of Higher Education.

We are especially privileged to have as our luncheon speaker for this conference the Honorable Charles S. Robb, Governor of Virginia. We are privileged because of his profound interest in and concern for education. Indeed if he continues on his present course, history may record him as one of the great educational governors of the state. Now I could appropriately stop there, and that would be roughly the equivalent of saying, "Ladies and gentlemen, the President of the United States." But I ask the governor to remember that this is an educational conference, and we always do credentials on people who are going to speak to us. If he thinks I am going to discriminate against him, he is, of course, wrong.

His career has been an unbroken succession of successful achievements. He earned his bachelor's degree at the University of Wisconsin on a Naval ROTC scholarship, finishing first in his ROTC class and setting a record for rewards received by a graduating senior. He was a Class Honor Graduate from the Marine Corps Officers School at Quantico, and went on to command an infantry combat company in Vietnam - receiving ten decorations and awards, including the Vietnamese Cross of Gallantry and the Silver Star. He is still a Lieutenant Colonel in the Marine Corps Reserve.

He earned his law degree at the University of Virginia, where he was elected to the Raven Society and received the Raven Award upon his graduation, both in recognition of his outstanding scholarship. He then went on after clerkship to join the famous firm of Edward Bennett Williams. He was elected Lieutenant Governor in 1977, and was selected by the National Council of Young Political Leaders to lead a bi-partisan delegation of state and national leaders on a diplomatic mission to the People's Republic of China. He was elected Governor in 1981, receiving more votes than any candidate for statewide office in the history of the State of Virginia.

As our Governor, he has honored the state by serving as a leader among governors. I will give just two examples. He serves as Chairman of the Education Commission of the States and as Chairman of the Education Subcommittee of the National Governors' Association Standing Committee on Human Resources. We can only speculate as to what the next significant achievement in the succession will be. In any event, we are just delighted to have him lend his words of wisdom as we seek effective ways to renew our commitment to the liberal arts and sciences in the curriculum -- Governor Charles S. Robb.

Address by Governor Charles S. Robb

Thank you, thank you Dr. Wright. I am always a little bit ambivalent when I realize that someone is going to do more than just suggest that it is time for the speaker to speak. I appreciate the thoughtful and kind characterization of some of those matters that are now historical in nature. I am very pleased to be with you and also to have an opportunity to share the head table today.

I am sorry I was not here for Dr. Keller's keynote address; but from the rave reviews that I have heard already, I obviously missed an important and enlightening opportunity. I trust that my friend Gordon Davies will assure that a proper record of the proceedings is made so that those of us who might not have been present for other reasons can be the ultimate beneficiaries of the wisdom she shared with us. I am pleased to be with your Vice Chairman, Horace Fralin. I am always pleased to be with a long-time friend; and, as a matter of fact, Dorothy McDiarmid and I just came back from a meeting of the Steering Committee of the Education Commission of the States in which some exciting new things were happening. Gordon was already telling me that he approves of a rough draft of a position that is of more than passing interest to those of you who are members of the higher education fraternity.

I welcome the opportunity to have a chance to address any distinguished gathering of educators, but particularly this one, on an issue that is of concern to all Virginians who have a stake in the future of higher education here in the Commonwealth or elsewhere in the country. In my judgment, today's gathering marks, in a modest way, a continuing process of change in public policy on education.

For some twenty years, enrollment driven formulas have more or less determined what the funding levels for higher education would be. In times of rapid growth this system has served higher education and the Commonwealth reasonably well, making growth possible where it was needed and maintaining adequate levels of funding for those institutions with more static student populations. But it seems to me that recently this system has served higher education less well. With enrollment growth essentially complete by 1981, the formulas have caused problems of allocation, by continuing to direct general fund dollars to institutions whose established projection models forecasted growth -- growth which in many cases simply did not materialize. As a result, other institutions that either capped their growth or predicted accurately what their enrollment would be suffered in budgetary terms, experiencing declining levels of funding in real, inflation-adjusted dollars.

Even as higher education has worked to cope with these particular financial problems, liberal arts programs which are dependent for their existence on enrollment have been closed down or constrained because we have had no better way than full-time equivalent enrollment to decide what really matters in the curriculum or how to fund it.

In addition, economic and social conditions have caused us to focus, since 1981, on programs that directly meet the needs of the economy. We have concentrated on bringing colleges into the job-training system, on putting into place in-service education via TV for engineers and technicians, on developing the Center for Innovative Technology, and on research areas that solidify these links between higher education and economic development. Our primary objective has been to build enduring relationships between education and business, because the economic health of our Commonwealth and the vitality of higher education are inextricably bound together.

We have emphasized research to support technological development and technical training to support industry, not as antithetical to the teaching of undergraduate studies in arts and sciences, but as interrelated with it. Sound undergraduate education is a necessary condition, as far as I am concerned, for sophisticated technological research; and the products and intellectual stimulation of advanced research in turn enrich undergraduate teaching. The continued high quality of undergraduate education in Virginia's colleges and universities, public and private, is one of the most valuable, indeed, essential assets available to us as we seek to attract new business to the Commonwealth. That Virginia is a good place to live and to work is in no small measure tied to its array of colleges and universities. A college graduate labeled "Made in Virginia" is a good product wherever he or she may go.

It is also true that the revenues of the Commonwealth are finite, and that it is increasingly difficult to find the money we need to do all that needs to be done. The support of higher education by business, therefore, becomes critically important. Our efforts to build enduring relationships between the two will benefit undergraduate education as well as advanced research. Yet even as we seek this support and put much of our emphasis in terms of new initiatives in the scientific and technological areas, the pendulum has begun to swing back again. We have begun to acknowledge the need to reaffirm our central commitment to the liberal arts as the core of any successful curriculum. To its credit, business has helped us to see our necessary role here in undergraduate education -- as it has realized the need that society has for widely and well-trained workers capable of thinking clearly and creatively, and able to communicate easily the results of that thinking to others.

Happily we may be in better condition than many states as we begin this discussion, because our institutions of higher education made several key commitments in the 1960's and the 1970's that have proved to have enduring value. The flagship institutions have deliberately cultivated their liberal arts programs despite pressure to do otherwise. The University of Virginia's English, History and Foreign Language Departments compete with any in the nation, public or private. Under President Lavery and Provosts John Wilson and Dave Roselle, Virginia Polytechnic Institute and State University's liberal arts programs have developed in concert with Tech's traditional land-grant majors. And Virginia Commonwealth University developed its humanities majors in direct concert with its professional majors in the performance disciplines. Further, during the 1970's our regional institutions deliberately used growth to build the core departments. Radford, James Madison University, and Old Dominion University are excellent examples of this kind of deliberative development. Several regional institutions chose to put special resources into core disciplines. George Mason University's investment in economics is an example of this. In addition, the community colleges refused from their beginnings to be merely technical colleges and insisted that they would be both academic and technical institutions.

More recently the Commonwealth has made several major investments in the core disciplines that have helped to prevent any wholesale flight from the liberal arts. For example, last year, for the first time ever, we funded 100 percent of the theoretical costs of library services and acquisitions in the Appendix M [budget guideline] calculation, a step that ensures that libraries, the essential repositories of the permanent record of our civilization, need not be doomed to inevitable decline. In addition, we have maintained a continuing investment in high energy physics, in the form of direct appropriations to the Virginia universities that belong to the Southeastern Universities Research Association to support their work in CEBAF, a continuous electron beam accelerator facility to be located at Newport News. Finally, we have invested in the core disciplines at the traditionally black institutions in a continuing effort to remedy historical deficiencies.

Each of these initiatives has a place in building sound support for the liberal arts, but your own contributions are at least equally important -- and probably more important if we are to see a genuine renaissance of liberal learning. I would urge you to use what you have gained from this conference as a source of inspiration as you return to your own campuses, to take from here a renewed sense of purpose for your own undertakings, and to seek common understandings among faculties, board members, and supporters from many campuses.

It seems to me particularly fitting that Virginia, whose commitment to higher learning is among the oldest in the Americas, should be the first state to begin a searching discussion of the undergraduate curriculum. If the story is not apocryphal, it was a faculty member at the Virginia Military Institute who observed, when honored upon retirement, "Things aren't what they used to be, and they never were." The best education has always been useful. It has always prepared men and women to be active participants in the world around them. The challenge for the future of American higher education is really no different: to shape curricula that give students skills to function in a technologically sophisticated society, and to forge an understanding of the human situation in all its glory and in all its pathos.

These are exciting times. A spirit of change, of renewal and of progress is in the air. The undergraduate curriculum is not simply a catalog of products demanded by students, it is a vital expression of our collective and individual identity. Its content is not closed or fixed, but varied and open to include all dimensions of human experience. Its scholarly methods of inquiry are as subject to change as are the bodies of literature or data upon which they are brought to bear.

As far as I am concerned, the proper movement of Virginia undergraduate education is not back to the arts and sciences, but forward to the arts and sciences. I would simply leave you with the challenge to get us moving, and let you know that I have confidence that you will do just that. I appreciate very much the opportunity to share a few thoughts with you just before you conclude this particular conference. I appreciate the interest that all of you have had, and the importance of the work that you have done. For your hospitality at lunch today, I thank you.

Introduction to Final Session

Dr. Stephen J. Wright, Chairman
Council of Higher Education

During the past 24 hours we have been all but inundated with a plethora of ideas, thoughtful analyses and vigorous discussions. Given the enormous importance of the subject we wrestled with, we dare not leave this place without raising the relevant question -- Where do we go from here? To help us sort out some possible answers to the question, we have invited two able educators: Dr. George R. Healey, Academic Vice President of the College of William and Mary, and Dr. James A. Davis, President of the Shenandoah College and Conservatory of Music.

Dr. Healey earned his bachelor's degree at Oberlin, and his master's and doctoral degrees at the University of Minnesota, specializing in European intellectual history with special reference to the French 18th Century -- which makes him particularly fitted to do the task we have asked him to do. The first ten years of his academic experience were spent teaching in interdisciplinary humanities programs of the University of Minnesota, the Massachusetts Institute of Technology and Bates College. Since 1962 he has been condemned to working in the administrative field. From 1962 to 1971, he served as Dean of the Faculty and Provost at Bates. From 1971 to the present time, he has served as Academic Vice President and Provost of the College of William and Mary. When Tom Graves takes his annual leave from the College of William and Mary in January, Dr. Healey will become the Acting President of the College of William and Mary, where his troubles will really begin.

Dr. James A. Davis earned his bachelor's degree at Randolph Macon College, his master's degree at Virginia Polytechnic Institute, and his doctoral degree at Florida State University. He began his college teaching at Ferrum College, as an Assistant Professor of History, and was quickly promoted to several responsible positions -- from the chairmanship of the Social Science division to Dean of the College to Senior Vice President and Dean. In 1982, he became President of the Shenandoah College and Conservatory of Music. In the meantime, he was elected to the Virginia Assembly, House of Delegates, in 1978, and reelected, in 1981, without opposition. That is a better record than he is likely to have as a college president, I would like to assure you. In any event I am delighted to have both these men, and I am going to ask Dr. Healey to go first.

Plenary Session--
Where Do We Go From Here?

Dr. Stephen J. Wright, Chairman
Council of Higher Education

Dr. George R. Healey, Acting President

The College of William and Mary

Thank you, Dr. Wright. I do not know whether studying the French 18th Century qualifies me for this or any other particular kind of job. A Call To Action, which is the subtitle of this session, seems to be entirely appropriate. It seems appropriate, first, to make some kind of summary statement -- at least as I have heard it in the discussion in the last twenty-four hours -- of where we are in our thinking about this massive and complicated question. What is the "here" from which we want to go "somewhere?"

I think, as I hear our conversations and talk with you and to many colleagues elsewhere on matters such as this, it is reasonably safe to say that the American academy, particularly in undergraduate institutions, is in a state or condition characterized by a suspicion -- which for some people is hardening to a conviction -- that there really is something wrong with the academy, at least as we have known it and would like it to be. We remain, I think -- and our attendance at this conference attests to this -- convinced in our hearts and minds that liberal studies should be the heart of our educational enterprise. We are, however, beset with suspicion, evidence that many others -- students, primarily, I suppose, but to some degree people in business, the larger community, and legislators -- do not quite share that conviction about the central significance and abiding importance of the liberal arts and sciences; or, if they do share it, they do not share it quite with our intensity or our particular definitions.

We see, many of us -- in the terms of one of the panelists yesterday -- a fragmentation of the vision of a curriculum, and a commitment that we once thought, at least, was more whole, more coherent, more believed in than what we now are working with. Without exaggerating over much -- it is easy to exaggerate in this because much of what we are doing is still good and will remain so -- I think we are threatened in the academy with a kind of loss of faith in what we are about in the liberal arts and sciences. This has deepened by the knowledge that we are somehow ourselves, in some degree, responsible for what has happened.

We can and do identify many other causes and point to many other scapegoats for what has occurred in the last generation or so in education. This conference has mentioned several of these from time to time: the increasingly self-centered materialist culture in which we do live, unquestionably; an overwhelming knowledge explosion in the last thirty or forty years that has bewildered many and confused many curricular discussions; accrediting requirements for various professional organizations, which impinge upon and take from our students, somehow, the older commitments to the liberal arts and sciences; funding formulas and the lack of funds.

All of these things are, of course, important. All of them are, in some ways, significant. But the fact remains that, in my judgment, at any rate, those of us who have been in this business for more than a decade or so could see much of this coming. We presided over it in some cases. In some cases we encouraged it. In others we concluded there was not any possible way of stopping or blunting it and pragmatically went along with what, in our own heart, we really did not think was the right way to go. Al Rollins' marvelously eloquent statement on this general point last night will long be remembered, at least by me, and I am sure you as well.

In any case, we do not like this very much. We are uneasy about it. We are feeling a little bit guilty, many of us. We would rather go someplace else from here. There are several questions that arise. Where do we want to go? Can we get there, and how? From what I have heard, from what you have heard, these are questions that do not have any easy answers. Maybe there are not even accessible answers; but the questions must be asked, and attempts must be made to answer them.

Where do we want to go? Ideally, I suppose, we want to go to an environment where students are deeply curious about themselves, deeply curious about the situations in which they find themselves -- about the nature of their fellow men, the nature of society; where students communicate in perfectly clear and convincing language; where the faculty are as enthusiastic as they are knowledgeable about what they are doing; where faculty are enthusiastically seeking linkages and connections in areas that lie close to, in some cases or far from in other, the particular discipline in which they have been raised and committed themselves. We are seeking, in a general kind of way, a situation where the academy somehow knows what it really is all about, and organizes itself and funds itself consistent with that vision -- where institutional choices are made and implemented within a coherent educational value system.

If we are realistic about it, we know that we never were in that situation -- at least I was never blessed to teach in such an arrangement -- and that simply a return to what might be called the good old days is not only an imperfect but a very impractical kind of agenda. We know that we will never reach the kind of perfection that we fantasize about on occasion, but I think we urgently want to move somewhere closer to that idea of a fully educated and liberalized student body and faculty. We want to do it, somehow, by combining the best of what our past experience brings to the dialogue with what is current, necessary and potentially exciting for the future. All of which is very vague.

Many of the statements that I am making at this time are necessarily vague, but it is no less real for being somewhat unfocused. We do have in us a need for some kind of action. Can we get that action in place? Can we move somewhat further toward our goal than we are? I think we can, and, I think, so do most of you or you would not here. How do we do it? I do not think it is in any way realistic to assume that, as a society, or as an academy, we are going to be struck with some invincible vision of the perfect curriculum that will somehow implement itself. We can look to and talk about, as we should, leadership in these areas; but it is unrealistic to assume somehow that leadership, even the strongest and most effective, is going to be reasonably responsible for reorganizing our curriculum and galvanizing our faculty to a new sense of purpose. Essentially what we have to do, it seems to me, is look at this in little bits and pieces -- taking some of the ideas shared in a conference like this, tending them solicitously in our own little vineyard, and hoping thereby to see them develop, excite, inspire a little bit, and thus move others to do more and better in subsequent years.

I think we can fund good ideas when they occur, and make an effort to appoint, retain and reward faculty who peculiarly do share this vision of the liberal arts and sciences. But, it is not going to be swift. It is not going to be complete. It is not going to be immediate. We do need, therefore, it seems to me, to have means like this where we can get together and suggest a few little ideas, talk about a few things that have worked back on our home campuses and encourage others to take those ideas and develop them. Altogether, over time, it may just accrete a little bit. It may grow; it may inspire a little bit. I am sure that all of you, I know I have, heard a couple of good ideas that might have some hometown practicality. I certainly trust, at least, that is what will come from this. I have been very general, purposely so. I will leave it to my colleague, Mr. Davis, to explain just exactly how we solve all these problems.

Dr. James A. Davis, President

Shenandoah College and Conservatory of Music

Mr. Chairman, distinguished colleagues, one of the great pleasures you have when you are up here is that you can do what you want after you have indicated what the topic is. In politics, I was taught many years ago always to seek the last word in a debate. Since this is not a debate, I found it a dubious honor to try and come up with something that has not been said, or which you might take away and remember as either the first or the last thing you heard in the midst of a lot of things that were said here over the last two days.

I have been in three important meetings the last two weeks which have helped to crystallize a little bit of my thinking in this area. Last week I was here for the meeting dealing with corporations and higher education. We titled that, Almost Competition or Cooperation. I listened to that conversation. Then I attended the Southern Association of Colleges and Schools, where we were debating implementation of a whole new set of standards and criteria for accreditation in higher education. One very small debate that took place there was mentioned in part of our deliberations here. You might be pleased or you might be unhappy when that comes back home to you. Graduate teaching assistants now will be required to have eighteen graduate hours in their teaching field before they are allowed to take charge of an undergraduate class. It will have an impact on many universities and their approach to teaching. There will be others that will find ways, perhaps, to deal with that in an acceptable fashion, but, nonetheless, it is addressing in a way the quality of undergraduate instruction.

In this meeting, I attended a session that, if I tried to describe it in general terms, would be a mixture of a section of the American Historical Association or a group of literature teachers along with a sampling of very practical administrators trying to come together to find some definition of things that are not easily defined. As I listened to all the different interpretations of some of the same concepts, that is the kind of feeling that I had. As I listened and have listened to the high-tech strategy that was talked about so much last week, and that we have heard mentioned several times here, I would remind you of the four dimensions of that which are so prevalent today in higher education.

The first tenet is that having enough scientists and engineers will take care of most of our technological problems. The second is that if we train the work force to deal with technology, teach them how to use a computer, or work with robots or electronics, we will get the solution. The third is that if we can convert the technological discoveries into entrepreneurial products, the high-tech center, the forced cooperation between business and industry and higher education, will get at the problem. The fourth is that government should get involved, raise standards and make sure that students can pass a math class, can write, have been introduced to science and perhaps even know something about a computer. That is called the high-tech strategy. It is talked about; it has been written about in thirty or forty reports probably over the last several years.

I do not take issue with a lot of the importance of those four points. What I take issue with, and I think what I have heard you take issue with over the last two days, is the priority given that type of education for our lives and for our system of higher education. As a matter of fact, that strategy assumes that our major problem, and the solution to the problem, is technological -- and not of the human spirit, of human relations or perhaps of human organization. To me, the understanding of those latter points comes more through what we have been talking about than perhaps through technology.

Perhaps David Hamburg, President of the Curry Corporation, shared with us the comment that is appropriate, in looking at that question, when he said that scientific progress does not guarantee human progress. The great leaps of knowledge in the physical sciences that have made possible our new information and communications technology also produced nuclear weapons. We have to learn how to teach others to anticipate and handle the side effects of new technology, or as one person said this morning, to form a priesthood of responsible technologists who can help us deal with the problems that come with technology. It is to the latter end, dealing with the human spirit, with human organization, that I think we must give equal priority in our lives for the next generation.

As I survey students, much to my chagrin, I find that the majority are not following the example of the University of Virginia and William and Mary where 60 percent or more are receiving liberal arts degrees. They are accepting the high-tech philosophy and moving into the high-tech fields of engineering, business and related fields. It offers a tremendous challenge to those of us who are working with liberal arts colleges -- and I include both public and private small and large in that respect.

The challenge, I find, is met in one of two ways, both of which are bad in my opinion. The first is simply to mimic the large universities, with their diversity and some of their programs that attempt to put people directly into professional fields. The second is to simply withdraw to your ivory tower and call technology barbarism. I do not think either is the appropriate answer. As a matter of fact, I would like to share with you some of my thoughts as perhaps the appropriate response from our liberal arts institutions. Most of it, again, was reaffirmed perhaps by one or more of the groups, or perhaps all the groups, as you were talking.

The first point I would make is that we must be certain there is no particular conception of the curriculum that is going to solve our problems in dealing with the human spirit. Instead, a supporting and demanding relationship between a teacher and a student helps to generate the confidence and personal values needed to deal with all the complex disciplines that we are faced with today in the midst of knowledge explosion. I listened to the discussions about revising the curriculum to include minority affairs, women's studies and a whole series of other things that are very important for integration into the curriculum today. But I still believe that inspiration on the part of the student and the relationship between a student and faculty member are more important than any discussion of the curriculum. We should never forget that in the field of liberal arts.

Second, the world is more scientific and technological; and we have done a terrible job in both high schools and colleges, in my opinion, in teaching people the field of science and math. In liberal arts, if we stick our head in the ground and avoid that issue, I think we are wrong. There are several things perhaps that we can do to respond to that concern. I think humanists and scientists have both fought each other so long, in some respects, that there is a real gap between humanists and scientists. As they have been fighting, they have let slip away from them the area of teacher education and teacher preparation into the hands of other individuals who have, perhaps, not kept the rigor and the depth of scholarship that are required. They have also allowed state Departments of Education, in many cases, to be dominated by individuals whose educational background was different from theirs; and they have allowed accrediting associations, in many cases, to be similarly controlled. As a result, liberal arts people can take the blame themselves, in my opinion, for some of the problems we find in teacher education, and among individuals who are now supposedly carrying the banner and working with the younger generation to share with them their philosophy of the liberal arts.

Third, I think the attitude toward the computer is related to this scientific and technological question. I heard some very good comments, which I would like to reiterate to you: that the computer is a dumb machine, that we do control it, and that what we have to be very careful about is being certain that we control the technocrat who runs the machine. The technocrat has to be reflective of the views we hold and also, hopefully, has to carry out the mandates that we desire for the liberal arts. I think that the computer can be a tremendous tool, an educational tool for us if properly used. The last point I would make on the subject of a scientific and technological concern is that presidential and administrative leadership can make use of the incentives we have at our disposal to achieve the goals we have talked about in this session. Whether we like it or not -- and I sit here as the President of one of our institutions -- we have, in many cases, the incentives needed to achieve many objectives we have talked about. Whether or not we have the courage to use them to that end is another question.

We need to respond, in my opinion, to another issue, and that is the increasingly international character of our lives. In many cases, the message is clear. If we do not adjust quickly to that reality, the price of our neglect will increase tremendously.

Next we need to respond to the phenomenal growth in government, at a time when understanding of bureaucracy and the operation of government is slipping because the liberal arts education of most of our students has been slipping. The gap between the understanding of governments and where our students are continues to widen. I think we can begin to close that gap. I heard Jefferson's name mentioned on several occasions. Perhaps if we went back and studied a little bit more of the rise of Jefferson, we would see that education in this area is of extreme importance to us.

We need to respond to leadership development. As I look at this, it is based on enlightenment, on opportunity, on a sense of personal worth, and self-confidence. In what kind of environment in the liberal arts do you find that? In my opinion, you find it in an environment small enough to enable you to cope with situations, or to develop the confidence you need to be a good leader. That can happen in a small liberal arts institution, or it can happen in a large university organized so as to appear small.

We need to respond to the reinvigoration of the teaching profession. I mention simply one issue related to that. The pride and respect, the attraction of good students back into the area of teaching, is absolutely essential. We do hold the keys to that area in my opinion. Again, whether or not we are going to be willing to spend the time and, in many cases, take some of our best scientists and humanists and perhaps wrench them away from a research project back into inspiring some young teachers, is a real question. I heard a lot of you address that in an indirect way, but I put it to you at this time in a very direct way.

Finally, I would be totally remiss, in my comments as the president of an institution that has a conservatory of music, if I did not tell you that this conference only mentioned one time in the whole discussion the area of the arts as a part of the liberal arts. I suggest that greater deliberation is needed on the place of the arts in this discussion. This, perhaps, could be the focus of an additional session at some point. If we neglect the arts, which are the highest expression of our culture, in my opinion, the advancement of civilization will suffer.

I conclude my comments with an old German saying: that you have to take life as it comes, but you should try to make it happen the way you want to take it. This conference has proven that the fate of education and the future of the liberal arts in our institutions is in our hands. I hope we will make it happen the way we want to take it.

Concluding Remarks

Dr. Stephen K. Wright

On behalf of the Council, I would like to thank Dr. Healey and President Davis for their wrap-up comments on this conference. I have a couple of announcements and housekeeping obligations that I hope will interest you. The Council, recognizing the need for curricular change in our colleges and universities, including our community colleges, recognizing also that frequently small amounts of financial support can make a critical difference, is planning to dedicate its Funds for Excellence Program to support proposals for curriculum change at the college level. The Council will publish guidelines for these grants, which will be competitively awarded sometime early next year. The awards will be made sometime early in 1986. This gives about a nine month lead-time for those institutions that need this kind of encouragement. I should think this would be a very good innovation that might indeed be helpful.

Now I have a number of orchids to distribute. I am sure you know perfectly well that a Council can not put together a conference such as this. The real architect of the conception of the conference is Dr. Gordon K. Davies. The staff member who actually organized the conference is Dr. David Potter. They have been assisted, of course, by other members of the staff too numerous to enumerate here. I would like to say thank you on behalf of the Council for all of the speakers, many of whom have made just outstanding presentations. We are all grateful for them. Finally, I would like to thank you for being just a marvelous audience.

Panelists for Concurrent Sessions

The Humanities and the Sciences: The Two Cultures Revisited

Professor Joseph J. Murray, Jr., Samuel Miller Distinguished Professor of Biology and Chair, Department of Biology, University of Virginia, Moderator

Professor James B. Davis, Department of English and Coordinator, Project on the Liberal Arts and Technology, Virginia Military Institute

Professor Ellsworth R. Fuhrman, Department of Sociology and Director of the Center for the Study of Science in Society, Virginia Polytechnic Institute and State University

Professor David W. Thompson, Department of Chemistry, The College of William and Mary

Professor George M. Van Sant, Department of Philosophy, Mary Washington College

Being and Doing: The Relationship Between Liberal and Professional Education

Dr. Edmund F. Ackell, Sr., President, Virginia Commonwealth University, Moderator

Professor Anne Andersen, Chair, Department of Dance, Virginia Commonwealth University

Professor Alan E. Fuchs, Department of Philosophy, The College of William and Mary

Professor Thomas C. Hunt, College of Education, Virginia Polytechnic Institute and State University

Professor Robert L. Vickery, Jr., School of Architecture, University of Virginia

Technical Training and General Education:
The Community College Experience

Dr. Joseph A. Ford, Assistant Vice Chancellor for Instructional Programs, Virginia Community College System, **Moderator**

Professor Deborah DiCroce, Chair, Humanitites Division, Tidewater Community College

Professor Michael J. Heneghan, Department of English, Northern Virginia Community College

Professor John Kaufman, Division of Engineering and Applied Science, J. Sargeant Reynolds Community College

Professor Benjamin W. Wright, Jr., Department of History, Central Virginia Community College

Liberal Education and the Students of the 1980's:
Responding to Shifting Demands

Dr. Ladell Payne, President, Randolph-Macon College, **Moderator**

Dr. Dana Burnett, Dean of Student Affairs, Old Dominion University

Professor Michael C. Lund, Department of English, Longwood College

Professor Thomas V. McGovern, Department of Psychology, Virginia Commonwealth University

Professor Sue V. Rosser, Department of Biology, Mary Baldwin College

Fragmentation or Integration: The Structure of Knowledge and the Organization of Academic Life

Professors George R. and Jane C. Webb, Department of Physics, Christopher Newport College, **Moderators**

Professor Steven Barza, Department of English, University of Richmond

Professor Loren D. Pitt, Department of Mathematics, University of Virginia

Professor Barbara A. Swyhart, Chair, Department of Philosophy, James Madison University

Professor John R. Thelin, School of Education, The College of William and Mary

Expanding the Scope of the Arts and Sciences: New Perspectives on Liberal Education

Dr. Nancy T. Bazin, Department of English and Director, Women's Studies Program, Old Dominion University, **Moderator**

Professor Grace T. Edwards, Department of English, Radford University

Professor William E. Jackson, Department of German, University of Virginia

Professor Vinson H. Sutlive, Jr., Chair, Department of Anthropology, The College of William and Mary

The High School-Higher Education Connection

Dr. William L. Bosher, Superintendent, Henrico County Schools, **Moderator**

Professor Galen R. Kline, Department of Foreign Languages and Literature, Virginia Polytechnic Institute and State University

Professor Harold H. Kolb, Jr., Department of English, University of Virginia

Professor Jay S. Paul, Department of English, Christopher Newport College

Dr. Elaine Witty, Dean, School of Education, Norfolk State University

How To Learn, What To Learn, When To Learn: Competing Models of General Education

Dr. Thomas J. Rice, Department of Sociology, Georgetown University (currently Research Associate, School of Education, Harvard University), **Moderator**

Professor Charles O. Burgess, Department of English, Old Dominion University

Dr. Philip L. Hall, Assistant Provost, Virginia Polytechnic Institute and State University

Dr. Eric D. Hirsch, Jr., William R. Kenan, Jr. Professor of English, University of Virginia

Professor Christopher J. Thaiss, Department of English, George Mason University

Advanced Undergraduate Work in the Arts and Science Disciplines

Dr. Martha A. Crunkleton, Assistant Director, State Council of Higher Education for Virginia (currently Program Director, Division of Education Programs, National Endowment for the Humanities), **Moderator**

Professor Thomas O. Hall, Jr., Department of Philosophy and Religious Studies, Virginia Commonwealth University

Dr. Jessie Lewis, Vice President for Academic Affairs, Norfolk State University

Dr. Jouett Powell, Dean, School of Letters and Natural Sciences, Christopher Newport College

Professor Hans C. Von Baeyer, Department of Physics, The College of William and Mary

Liberal Education and the World of Work

Mr. Stanley E. Harrison, President and Chief Operating Officer, BDM Corporation and Member, State Council of Higher Education for Virginia, **Moderator**

Dr. James Antonick, Director of Cooperative Education, Old Dominion University

Dr. Joseph Johnston, Association of American Colleges

Dr. Russell G. Warren, Vice President for Academic Affairs, James Madison University

Dr. Rodney E. Hanneman, Vice President, Corporate Research Development and Energy Resources, Reynolds Metals

Perceptions of the Liberal Arts and Sciences: The Views of Others

Dr. Samuel Spencer, Director, Virginia Foundation for Independent Colleges, **Moderator**

Dr. Robert Ash, Eminent Professor of Mechanical Engineering and Mechanics, School of Engineering, Old Dominion University

Dr. Thomas Reuschling, Dean, School of Business, University of Richmond

Preparing the Curriculum for the Future: Coping With Uncertainty and Change

Dr. Robert L. Kellogg, Dean, College of Arts and Sciences, University of Virginia, **Moderator**

Dr. Fontaine Maury Belford, Dean of the College, Sweet Briar College

Dr. William Kearney, Dean, School of Arts and Letters, Hampton University

Dr. Robert G. Templin, Dean of Instruction, Piedmont Virginia Community College